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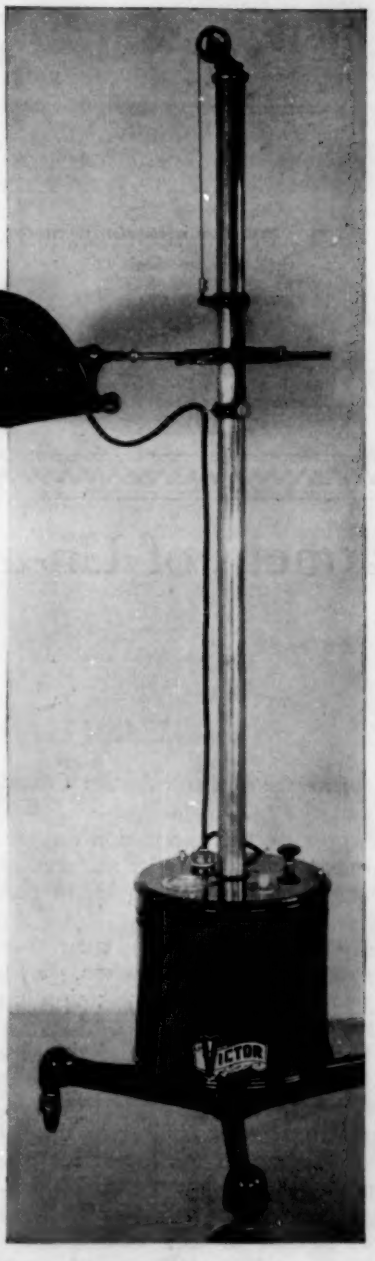

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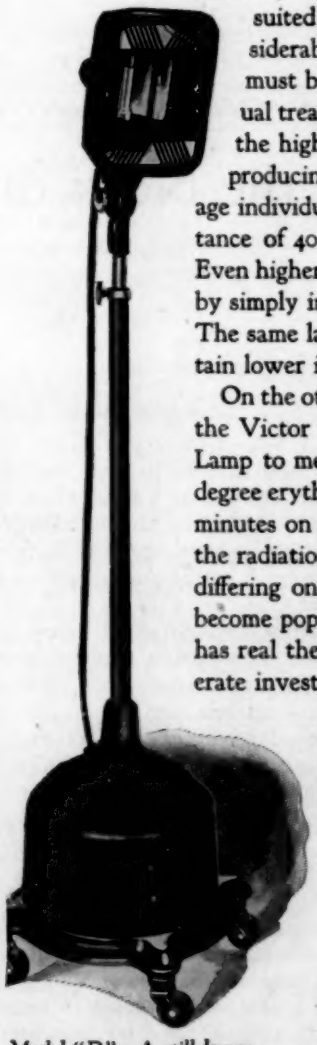

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Treatment of Un-united Fractures of the Neck of the Femur

By John W. Powers, M. D.

Read before the Eleventh Annual Convention of the American Physiotherapy Association, Milwaukee, Wis., June, 1932

The purpose of this discussion on "An Evaluation of the Treatment of Un-united Fractures of the Hip" is to enlist your support in helping us to reduce the number of cripples from this source.

The surgeon is required to treat these cases on two occasions: at their inception, when, they are but potential non-unions and again when non-union has been definitely established.

There is no doubt that the individual suffering from a fractured hip during the last decade has been better treated than previously.

Through the almost universal use of the Whitman Abduction Method in the treatment of the acute fractures, the percentage of non-union has materially decreased. It now occurs in 30% of cases in patients under the age of 60 and in 45% over the age of 60. While this improvement is laudable, there is yet a large number of these fractures terminating in this serious and painful disability.

Since non-union can be anticipated in such a large percentage of these sub-capitular fractures of the neck of the femur, it has become my practice to advise an open reduction at the time the fracture occurs, in selected cases.

It is not so long ago that it was quite general practice to consider an old patient with a fractured hip as unsuited for active treatment. We have outgrown this idea and it is only a step further to treat the anticipated non-union before it occurs and at a time when conditions are more nearly ideal. Many of these patients over 60 years of age are reasonably good surgical risks and especially those who have been active and vigorous up to the time of their accident.

On exposing the fractured area, I have frequently encountered a fold of the capsule wedged between the head fragment and the neck fragment. After the removal of this fold of capsule and a careful re-apposition of the fragments, I have removed from the tibia a strip of periosteum with numerous bone chips adherent and wrapped it about the fracture line. This is a comparatively simple procedure and can be done quickly. It materially enhances the opportunity for union and decreases the length of convalescence.

In the patients under 60 as well as those over 60 in which non-union occurs, the fracture is located in close proximity to the head, where the circumference of the neck is smallest. These require most exact apposition and prolonged immobilization to result in union. It is quite possible that the percentage of non-union in these cases might be lowered by a more careful application of the principles of the Whitman Abduction Method and by checking up the position of the fragments with stereo X-rays before the cast is applied. In many of these cases there is an economic urge to get the greatest

possible function in the shortest time. To many of these patients it would be little less than a tragedy to be confined for 16 to 20 weeks with the accompanying expense and loss of wage, to find at the end of that time that they have a crippled hip. An autogenous bone peg operation can be done on these patients with but little risk and bony union will usually be firm in 16 weeks.

In those cases that come to us for treatment after non-union is definitely established, it is the consensus of opinion of those men who have treated large numbers of these patients that, if it is possible to reestablish bony contact between the fractured head and the neck of the femur, the greatest amount of function can thereby be restored to the injured hip. This not being feasible, the next best result can be obtained by removal of the detached head, placing the reshaped great trochanter into the acetabulum and lowering the attachment of the abductors on the shaft of the femur.

In my opinion, a more accurate application of the individual indications of these two methods will improve our results materially, will reduce the length of convalescence and decrease the number of cripples from this source.

The autogenous bone peg operation is not a panacea for non-union in these fractures—it is a meticulous operation, to be undertaken only under competent circumstances. But under these circumstances and in properly selected cases, a high percentage of good functional results can be accomplished. Certain requisites are essential: that the fragment of the neck be adequate to make good contact with the proximal or head fragment, as accurate adjustment of the freshened surfaces of these fragments and secure fixation are absolutely necessary to obtain bony union; that the patient be sufficiently vigorous to survive a rather formidable operation, and that the separated head of the femur be viable and with the articular cartilage well preserved. These indications are seldom present in those cases of non-union that have existed for one or two years, where the neck has usually disappeared through erosion and the great trochanter lies flat against the margin of the acetabulum, while the head is eburnated and pitted.

A Reconstruction Operation can be done in these cases, even in the more delicate, without undue risk. By a comparatively simple procedure one may approach the joint through a lateral incision over the great trochanter, and detach the abductor muscles together with a thin shell of bone. After turning this back, remove the head fragment. The trochanter is roughly reshaped to fit the acetabulum and levered into place. The muscles are reattached lower down on the abducted femur. They are immobilized for three weeks and weight bearing is permitted in six weeks.

This procedure is not a makeshift, but gives a very serviceable hip with a good range of motion. I believe it should be used in any case of non-union where there is much question as to the success of the bone graft, or it should especially be considered in those whose health is enfeebled and in the patient who can ill afford a long convalescence.

Conclusions: Despite the improvement of the past ten years in the treatment of fractures of the neck of the femur, there are a large number of these cases resulting in non-union. Open reduction at the time of fracture is indicated in selected cases, with the use of osteo-periosteal grafts. An earlier use of the autogenous bone peg in cases where non-union may reasonably be anticipated, will prevent many of these. In cases where the autogenous bone peg is not indicated, a simplified reconstruction will give a stable, painless hip with a serviceable range of motion.

Note: This lecture was illustrated and supplemented by roentgrams.

Milwaukee, Wis.

Psychic Factors in Rehabilitation

By Harry Tabachnick, M. D., Milwaukee, Wis.

Read before the Eleventh Annual Meeting of the American Physiotherapy Association, Milwaukee, Wis., June, 1932

You, who invoke the physical forces of nature in alleviating the defects of injury or disease, undoubtedly are aware that all individuals over whom you minister are endowed with mental forces somewhat difficult of description. With their periodic visitation to your department you soon, perhaps, get to estimate your patients not only from the standpoint of type of defect or disease, but also from the standpoint of attitude with which the injury or defect is met by the patient. The realization comes quickly that some individuals are non-cooperative, some are exceedingly difficult to handle and require pondering over, some are very enthusiastic making light of their trouble, some evidence disability and complaints beyond being warranted by the negligible amount of injury present.

If yours is an inclination for interest in human nature from a speculative standpoint, you have wondered about and wanted to know just what is going on in the deep mental recesses of these individuals whom you observe at their physio, occupational, or operative therapy.

Possessing a good understanding of human nature means that you probably have unconsciously placed your human charge in one of three categories—that of the healthy-minded, that of the malingerer, or in that of the neurotic.

Of the three types he who is in the category of the healthy-minded is the easiest dismissed from this consideration. He usually makes light of his trouble. For him rehabilitation comes easily. If he must of necessity go on through life with a disability, he meets the issue hopefully. He has an inborn optimism and enthusiasm. He reconciles himself early to the defect bestowed upon him by fate at birth or through accident. He early makes a proper self-evaluation in his social sphere and eventually becomes a producing cog in some one department of society's workshop. Being healthy-minded his is usually a well-earned security and comfort in the society of those to whose security and comfort he himself contributes. He usually enjoys life, and overcoming its obstacles thrills him. If he meets with reverses his philosophy is best worded by the expressions "better luck next time" or "it might have been worse." In short he is your easy type of case.

Let us turn now to the next category, that in which comes the malingerer. His supposed disability is overshadowed by a multiplicity of complaints. When

caught off his guard, complaints must be bizarre and manifold for he has forgotten or overlooked the cause for his being in your department. A moment ago he bent his arm or his back to a greater extent than he has heretofore admitted being possible. You probably would have missed seeing this performance had you not observed unbeknown to him. For his malingering there is usually a motive. Most commonly his objective is the receiving of a monetary award. His is a peculiar type of behaviourism placing him in the light of being unfair to himself, to society or to the employer, government or insurance company responsible for his return to physical perfection. He may be one of the thousands of workers whom industry has handled without qualms of conscience. His financial remunerations for labor have probably been small. His work has probably been difficult drudgery. He sustained accidentally some injury which may have been trivial or otherwise, but nevertheless at present he shows no signs of actual physical defect. Yet he persistently complains of difficulty and disability. By persisting in complaints he receives a disability allowance by way of compensation and has a somewhat modified holiday. It is perhaps almost as much as he could earn these days were he employed. But then, there is the apprehension that return to complete recovery does not mean return to a job. It may be that he fears industry has thrown upon him, as it has upon countless other thousands, the burdens of these distressing times—joblessness with no security and sustenance, no opportunity to earn an income. So he continues with his contentment in shams, being of necessity under your care since something must be done for him if for no other reason than that of mental appeasement. He finally has his day before the industrial commission or jury. He either receives an award or ends in defeat. By force of circumstances he is forced to seek other ways and means for income. If work is plentiful he gets a job, if not he reluctantly becomes another charge on the community. His attitude is best inferred by the expression "the world owes me a living by a chance at earning it." Whether or not he is right, is a question more sociological than medical. In these times more than in any previous, the foregoing facts apply to malingering. The psychic motives, of course, do not always align themselves in the manner here mentioned, but suffice it to say every case of malingering has for its objective some form of monetary award.

In the next category and most worthy of consideration is the neurotic or more particularly he with neurosis superimposed on physical defect. One wonders at the adherence to and profusion of subjective complaints here. But in contradistinction to the malingerer, the neurotic is peculiarly unconscious of the phenomenon involved in the precipitation of his manifestations. His complaints are expressions by way of the physical body, a dialect, by which means the subconscious mind brings its troubles to light. In common parlance you may ask, "How and why does he get that way?"

To begin with, every neurosis is very much a picture of human nature, but like an artist's painting, it must be carefully scrutinized in order that an appreciative understanding is attained. Towards adverse circumstances an individual either makes an effort to adjust himself in the right way or there is retreat for refuge into a state of health which characterizes functional disorder—self-assertion, self-deceit, pretense, compromise, fantasy, hesitation, fear, or any attitude which has for its purpose an apparent evasion of life's realities. The phenomenon the neurotic presents is an effort, unconscious though he may be of it, calculated for attaining security, comfort, sympathy, affection or support. This type of effort is a picture of evasion of responsibilities, a maladjustment to life's demands. This is the neurotic's fashion of meeting the demands of life which briefly and in convenient alliteration are those of society, sex, and subsistence.

We today understand the neurotic better than did the medical divines of early medicine. Their regard of the individual was akin to materialism. To them he was merely so much tissue—a flesh and blood make-up only. Fortunately today we are what might be termed spiritualistic and are cognizant of the individual as being of somewhat more than so much tissue. We weigh his emotional make-up and find that his feelings, thoughts, desires, envies, hates and loves, sorrows and rejoicings, are worthy of as much consideration as are our discoveries in wards, laboratories and post-mortem rooms. Peculiar complaints representing emotional factors are the flowers that bloom in the land of subjective trouble. They grow from a subtle type of soil which is technically termed the subconscious mind. It is because of this subtle soil that obvious tears and smiles are not the only expressions of emotions nor obvious gestures the only indication of mental activity. Facing the problems and adversities of life means for the neurotic an assembly of belligerent and obstreperous mental elements which, let us say, because of convention or other reasons are not granted the ordinary means of expression. The result is inner conflict. It gains expression by a dialect which uses various locations of the body as its symbols. We see it as unconscious imitation or simulation of physical defect. The neurotic is unaware of this whole mechanism which converts to the body the subconscious mind's troubles or rebellion.

It is not strange that nervousness, technically termed psycho-neurosis or functional disorder, is on the increase. This era of unprecedented scientific growth and progress is a fast-moving and most complex one. Its growing pains are neuroticism. The accusing finger of our so-called modernity points out as slumping, or in intellectual or economic retrogression, he who believes today what he believed five years ago. Little wonder then that men and women become nervous if in their yearning for the peaceful, methodical slowness of the horse and buggy days they still must compete with the Jones's sixteen cylinder standards. Only an extremely well stabilized make-up is capable of a rational attitude when confronted by the possibility or experience of financial reverses, business disappointments, social discouragement, or ruin.

The vicissitudes of love and domesticity, sex in general, are occasionally factors demanding reckoning with in neurosis. To some women the average feminine role is a distasteful sort of thing. Some resent and protest against the masculine domination which seems a part of our society and conventions. To many women their customary allotment of inferior stations in all of life's activities seems unjust. Many demand the right for meeting life's demands on their own terms and in their own way. Their harbored sense of injustice is manifested by an urge to cut away from masculine domination. They consequently are repulsed or are repulsive. If we reverse all of the foregoing we have the picture of a man dominated perhaps by a nagging woman. He resorts therefore to fugitive liaisons or promiscuous habit practices in which originate morbid anxieties. Like the alcoholic who cuts the wires twixt himself and stern realities by oblivion in inebriety,

some men and women seek refuge from realities in the haven of unconscious imitation of disease. Thus does the army of the socially maladjusted come into being. Analysis of their life style usually reveals the factors behind and responsible for the functionally disordered situation.

The ever complaining neurotic with physical defect is probably quite unmindful of the fact that meeting issues in life is difficult for him not wholly because of his disability. Unless someone has analyzed him completely, he probably is unaware of the physical defect being used by him as a defense against meeting life's demands. In his cosmos there are other difficulties accounting for his being unaccountable. How do his efforts towards an objective compare with those of the following? The poet Milton was blind. Demosthenes, a stammerer, by effort became an orator. Beethoven, though deaf, gave us symphonies. Napoleon was an epileptic. Theodore Roosevelt was blind in one eye and extremely debilitated in early life. Robert Louis Stevenson was an invalid throughout life. Laennec, who invented the stethescope, and responsible for much of our early pulmonary disease information was himself miserably racked with tuberculosis. A deaf, dumb, and blind Helen Kellar doesn't seem to miss the senses she is deprived of. In none of the foregoing was there ever craving for solicitation nor was there self-pity because of disability. They evidently early resigned themselves to the physical fate in store for them. Their minds never used the physical disability for a crutch nor was it a halter on their progress. The individual with functional disorder superimposed on a case of physical defect usually characterizes himself by the expression "How much I could do had I not this infirmity."

An actual case which serves well as an analogy of the healthy-minded attitude is one you may have read about in the news recently. It concerns a Yale student who previous to last summer was considered the best baseball short stop in the Eastern Colleges. Last summer he accidentally fell off a motorboat which had been turned suddenly about for the rescue of someone who had slipped from an aqua-plane. This young man's arm was caught in the boat's propeller. It subsequently had to be amputated. This spring his baseball colleagues insisted he remain their baseball captain. He did, played ball, and did exceedingly well at the game despite the varied contortions necessitated by the absence of an arm. He, in addition, plays golf well and swims. His disability has by no means lessened his ambition. That he has set an objective for himself is quite striking. In his case there is no being deterred from progressing, achieving, no apparent obfuscation in outlook. He intends to go on and study medicine.

An actual case which best illustrates the forces one must combat in malingering is that of a middle-aged woman who came to the free dispensary clinic complaining of inability to move an arm about the shoulder joint. It was thought that she had had a bursitis although X-Ray revealed nothing remarkable. The slightest attempt at moving the arm about the shoulder resulted in apparent exquisite pain. It was thought best to anesthetize her, get the arm in motion about the joint, and retain it in a certain position for a short period. She consented to have the foregoing done. She remained hospitalized for two weeks. She returned to the dispensary thereafter still unable to move the arm about the shoulder, and in addition, manifested a partial loss of voice. She was sent then to the laryngologist who before examination of the vocal cords thought that the manipulation done previously had involved an indirect injury to the nerve enervating voice production on the side dealt with. But examination revealed no signs of defect, save that one of the vocal cords seemed to be stationary. It should here be stated that this same condition may occur in hysteria. At any rate the cause was debatable. She was then referred to neurology where, after prolonged use of suggestion, the arm was movable. We thought that both the shoulder joint and partial voice paralysis were hysterical manifestations. Try as we might we could get at no apparent factors by which to ascertain a motive for this situation. She went on thus for weeks, receiving physiotherapy several times weekly and neurological attention once weekly. After each séance the arm was moved successfully by suggestion. Finally after several weeks ensued with no apparent clearing up of this trouble, she one day at the close of her visit in neurology asked if her condition could possibly be due to an accident. This question was followed up by several of our own and then came the revelation.

She informed us that immediately before her initial appearance at the dispensary, a street car, in which she was a passenger, had been slightly bumped by a truck. She claimed her shoulder had bumped against her seat. There was, by the way, no record of superficial signs of injury. She had immediately retained a lawyer. She had been beautifully mute on this subject for almost two months. She was informed that the dispensary handled no cases under litigation and that she must be dismissed and look for private medical aid. She took her leave avowing that the street car company had more money than did she and could well afford a good settlement in her behalf. Of course we had no reason for being incensed at the cost to the hospital and dispensary, for her hospitalization, X-Ray, medical, orthopedic, physiotherapeutic and neurologic attention. We learnt later that she had received a small settlement and strangely enough we were also informed that she was cured. Her diagnosis on record is a picture of a medical dilemma—first, bursitis; second, recurrent laryngeal nerve paralysis; third, hysterical paralysis of voice and shoulder joint; fourth and correct, out and out malingering. The only nice thing about her conduct may be mentioned with pardonable pride. We heard that she gave the physiotherapist and the neurologist the verbal credit for having cured her. But the fact must not be overlooked, that even by so doing, she indirectly implied that her troubles were real.

The following facts, garnered from another actual case, exemplify the real neurotic. The manifestation which colored this picture was very similar to that in the case previously mentioned, namely, an hysterical shoulder joint paralysis. The woman in this case was about forty years of age. It was also ascertained that she was the fifth wife of an eighty year old man and claimed that she was not aware of either fact at the time she married him. Her trouble persisted for weeks. She was given various types of physio-therapy several times weekly, and came to the neurology clinic for observation once weekly. At each appearance, by suggestive measures, we succeeded in obtaining motion of the arm about the joint, but permanent relief remained in abeyance. She continued with her hysterical picture for many weeks and finally we lost track of her. After a lapse of a year or more we again saw her. She was healthy and happy. We were informed that her eighty year old husband had passed away. She had remarried. This time the man was close to her own age, a good provider who required little waiting upon. Her hyster-

ical shoulder paralysis had cleared up just before this marriage. In certain selected cases, and in more than one sense, Mourning does become Electra. In this case no element of desire for monetary award was behind the functional disorder. This was a pure neurosis, arising from a maladjustment to certain factors in the cosmos of the individual, and remedied by a more satisfactory union.

It is estimated that in an ordinary general medical practice sixty or seventy per cent of patients seeking medical attention are without real physical defect whatsoever. They are the components of our great neurotic army—men, women, and children. They are ever in quest for relief from sources bonafide or questionable. To those who are connected with sanitaria or institutions wherein the neurotic is specially dealt with, he is a familiar type, with his vague complaints which he characteristically enhances with a variation of importance, as does a symphony a theme.

Contemplation on the attention offered the neurotic in his quest for relief, leads one to a multiplicity of destinations old and new. The ancients offered him concoctions of everything from filth to gold that the devil may be cast from him, for he was demoniacally possessed, bewitched. From the days of casting out the devil we have evolved through periods of innumerable approaches in dealing with him. He has been hypnotized by the Mesmerites, suggested to and led to auto-suggestion by the Coués, magnetized by magnetic healers, chanted over with incantations from drugless and faith healers, manipulated by chiropractors, electrified in blankets and by the Abrams machine, read and appealed to, to the point of self-hypnotism by the disciples of Mary Baker Eddy. One could go on enumerating ways and means without number. Any or all of the foregoing failing in mitigating the neurotic, he nevertheless has been known to discard his crutches at the Shrine of St. Anne de Beaupre and miraculously walk. The supposed blind have regained vision, the seemingly anesthetized, have regained sensation, and those in unbearable pain have become benumbed at localities such as Lourdes. Life-long paralytics and debilitated arthritics have been restored to health by a chain-drug-store remedy suggested by a one-page-ad. Is it possible then that there's more in heaven and earth than we dream about in our medicine? The answer, of course, is emphatically "no." There are those who would argue otherwise but we must regard their supposed wise and profound contentions as neither rational nor logical, scientifically. For, only too rarely is the land of subjective trouble ventured into and when such is done there is usually disclosed the life's problems from which refuge is sought by means of the phenomena of neurosis. If after this disclosure there follows a psychic approach, by verbal and other means, designed for readjusting the individual, there usually occurs a miraculous modification of the neurotic manifestations. Here is a medical situation in which like cures like. The psychic disorder is ascertainable by psychic investigation and is put to flight by psychic influences. Many neurotics are driven from ethical medical hands because their complaints are received with a disdainful regard and they are told that there is nothing wrong with them. This disregard of neurotic complaints, this so to speak "laugh-it-off" attitude has laid open to cultist and quack a field which always has been and rightly should always be part of the medical realm. In this field physiotherapy with its associated subdivisions has a definite part to play. Along with other psychotherapeutic measures, it may serve as a valuable supplement in bringing about a readjustment of the neurotic.

We all know that some types of individuals are impressed easily by something tangible and visible, and by actions as well as words. Some are easily awe-inspired, particularly many neurotics, all of whom, moreover, need mental diversion, that their introspective self-searching-for-trouble tendencies be lessened. Physiotherapy with its allied divisions lends itself well in this regard. After a goal is reached, proper explanation should ensue concerning the factors responsible for satisfactory result. The relative importance of the type of physiotherapy exhibited in a case of phychic disorder should be later diplomatically explained, lest the patient be left with an acquired unwarranted and over-emphasized belief that this or that particular expedient was responsible for the recovery. It was one of the means made use of to assist him or her in acquiring an altogether new philosophy or outlook on life in general.

At this point it seems fitting to recall Franz Anton Messmer, a Viennese physician of about two centuries ago. Messmer heard that one Maximilian Hell had cured a lady's stomach trouble by the application of a magnet. He decided to attempt similar tricks with Hell's magnets himself. He was amazed to find they worked. His practice grew enormously despite the infuriated Viennese medical men. He probably had an eye for research for he soon discovered that the use of the magnet was unnecessary, that he could cure the patients by merely touching them. The mystic power entailed in this phenomenon he called animal magnetism. Messmerism or hypnotism became a rage but Messmer died discredited and poor. He had neither fully understood his own discoveries nor had he realized that he was the first of the new psychologists. He had availed himself of a psychic approach in handling the neurotics. In the beginning he successfully used a crude contraption which evidently inspired awe. Later he was able to do as well by the mere use of words. He probably was the first to get good psychic results in functional disorder. He probably possessed more capabilities than he was aware of because his success infers that he possessed a good understanding of human nature by which means he easily gained the confidence of those who came to him for relief. From these recollections of Messmer we must justifiably conclude and acknowledge that under ethical medical supervision anything which cures the patient is acceptably scientific.

In conclusion, therefore, the physiotherapist who so often is called upon in the rehabilitation of those who are or may become psychically disordered, functions best when in his armamentarium there is included the happy faculty for proper display of thoughts by use of spoken words. Through the ages words and magic were one and the same thing and to this day words retain much of their magical power. They make evident and enhance a kindly, sympathetic attitude and they may alter a situation of utter despair to one of greatest happiness. By words the thought processes of the to-be-permanently-disabled may be so well directed that on their going out into the world again theirs is the realization—that they must at least get to first base—that the other factors in the game are the other players' responsibilities—that any situation is condonable providing one's best efforts are part of it. A disability though blinding at the moment may, by the proper use of words, be viewed with a hopeful philosophy while changes are awaited in the progress towards recovery

and reeducation, for words are universally the means by which our fellow creatures are influenced.

Finally, if orders on a patient were to include a brief note relative to the psychic tendencies and social phases of the case, the worker would have an immediate insight into the individual problem which each case presents. Thus forewarned, the physiotherapist, with his forces of nature supplemented by an appreciation of the psychic phases in the case at hand, is then in a position to influence remarkably the emotions, decisions, judgments and perspectives of those in whose rehabilitation he is taking part. By so doing he plays an important role in our present day effort directed at hastening psycho-neurosis into the category of the vanishing —the passenger-pigeon, the daguerreotype, model T, typhoid, and small-pox.

Immobilization in Obstetrical Paralysis and Its Effect on the Elbow Joint—Description of a New Type of Abduction Splint*

By R. Plato Schwartz, M. D., Associate Professor of Orthopedic Surgery, Rochester University School of Medicine and Surgery, and Edward A. Knight, in Charge of Orthopedic Shops

CHARACTER OF THE LESION

Duchenne[1] states that to Smellie is attributed the first observation of bilateral birth paralysis following a forceps delivery. According to the same author, M. Danyau reported the first authentic case of paralysis from this cause to the Societe de Chirurgie in 1851. The observations of Duchenne[1] lead him to state that:

"The presiding facts show that in this kind of paralysis of the upper limb from obstetric manipulations the arm falls motionless alongside the body, and is rotated inwards; the fore-arm remains extended, *but the movements of the hand are preserved.*

"I leave to others the study of the anatomical cause, and to say why in these cases the same muscles (deltoid, infraspinatus, biceps, and brachialis anticus) are always paralyzed." (From L'Electrisation Localisee, pp. 311-381; 1872.)

In 1874 Erb[3] reported the point of injury at the junction of the fifth and sixth cervical nerves which explained this distribution of paralysis and the resulting deformity of the upper extremity. Disturbance in nerve function at this level results from tension on the nerve due to "forcible depression of the shoulder while the head is bent to the opposite side and rotated." The degree of injury is variable between slight stretching followed by hemorrhages in the perineural sheath and complete solution of continuity with involvement of lower nerves of the brachial plexus. In the latter instance there is corresponding evidence of paralysis in other muscles of the shoulder girdle and upper extremity.

ACCEPTED FORMS OF TREATMENT

The number of different methods advocated for correction of the prevailing deformity is indicative of the prevailing differences of opinion.

Immobilization of the upper extremity, full external rotation with abduction of the arm at 90°, forearm flexed to 90° and the hand in supination was first advocated by Fairbank in 1913. Operative procedures such as nerve suture by Kennedy,[6] and tendon lengthening as described by Fairbank[6] and modified by Sever,[7] are in general use. Without authoritative exception it is accepted that neither of these procedures is free from the necessity of post-operative immobilization of the extremity in the position above mentioned.

The duration of immobilization as advised by various authors varies from a period of a few weeks to that of several months. This has usually been accompanied by the recommendation of exercises for the restoration of function in the affected muscles. It must be borne in mind, however, that these exercises are practiced for a period of a relatively few minutes as compared to the twenty-four hours a day of wearing the apparatus with the elbow fixed in flexion of 90°.

While striving for improvement in the function of an impaired musculature about the affected shoulder, methods of treatment have led to the adaptive shortening of the periarticular structures. This restricted motion is expressed by varying degrees of limitation in extension.

While recognizing the importance and necessity of immobilization in the above position for adequate recovery of the affected musculature of the shoulder joint, we are forced to recognize the detrimental influence upon the function of the elbow.

A brace designed to meet the requirements of the shoulder and, at the same time, provide for the flexion

Fig. 1. Anterior view with brace applied and fore-arm extended with the hand in supination.

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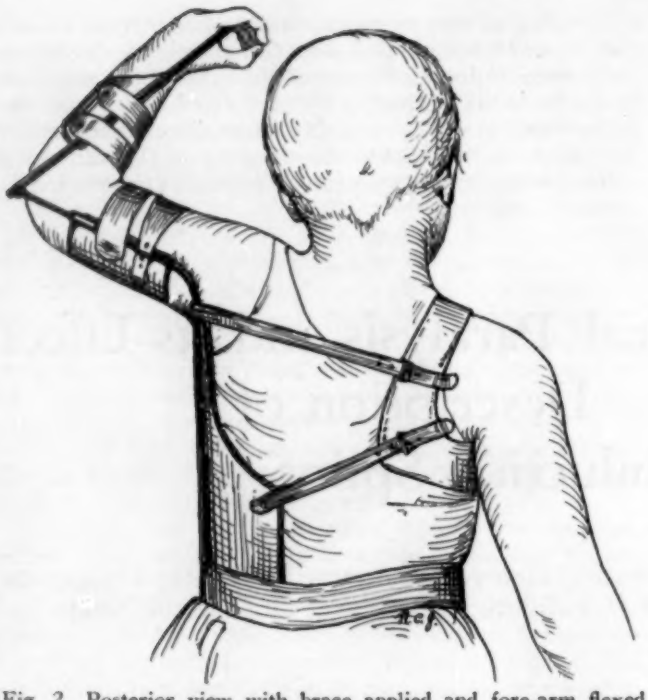

Fig. 2. Posterior view with brace applied and fore-arm flexed to 90° with the hand in supination.

and extension of the elbow, would seem to meet the prevailing indications. Figs. 1 and 2 illustrate such a brace which fills the relative requirements for flexion, extension and intermediate positions of the fore-arm in relation to the arm, while retaining supination of the hand, as applied to a patient. Fig. 3 is a line drawing revealing the mechanisms of the brace at the level of the elbow joint. Fig 3a is a side view from the medial aspect showing the fore-arm in flexion. Fig. 3b shows the fore-arm portion of the brace in extension. Fig 3c reveals an anterior view looking down on the mechanism at the level of the elbow joint. In attempting to meet the above indications, various types of joints have been tried; the one illustrated has been found to meet the indications most admirably and, at the same time, with the least expense in construction.

This paper has been presented for two reasons:

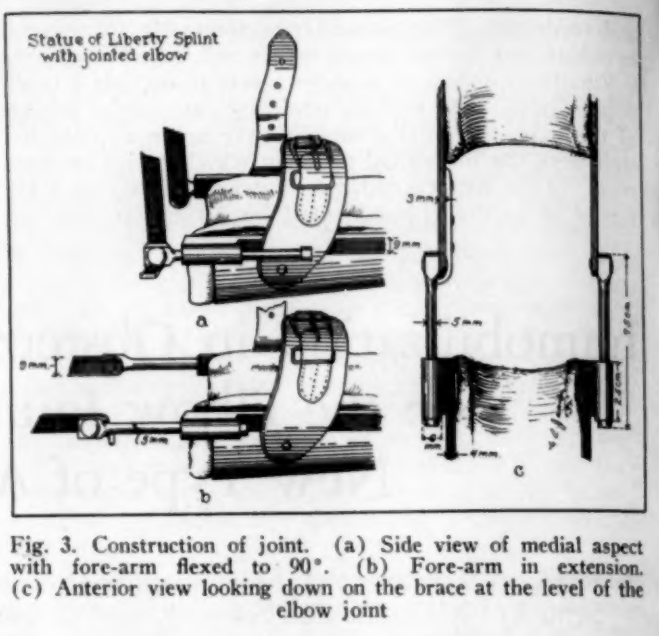

Fig. 3. Construction of joint. (a) Side view of medial aspect with fore-arm flexed to 90°. (b) Fore-arm in extension. (c) Anterior view looking down on the brace at the level of the elbow joint

1. To emphasize the principle of avoiding the creation of deformities in a normal joint while applying treatment to an adjacent structure.
2. To illustrate the application of that principle by the provision of flexion and extension of the elbow during immobilization of the shoulder in supination, abduction and external rotation, with the hand in supination.

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Low Back Pains and Their Relation to Physiotherapy

By Toufick Nicola, M.D.,F.A.C.S., Montclair, N. J.

Presented before the New Jersey chapter of the American Physiotherapy Association

The term "low back pain" needs no explanation. When we speak of the low back we usually include that part of the back from the 12th dorsal vertebra to the coccyx. In other words the lumbar and the sacral regions together with the sacro-iliac joints.

The *causes* of low back pain are quite numerous and include every branch of medicine and surgery. This paper will be limited to those conditions which come under the care of the orthopedic surgeon. They will be discussed under four heads: 1. Trauma. 2. Arthritis and toxic conditions. 3. Bad posture. 4. Congenital anomalies.

The *trauma* met with in low back pain is usually sprain of the lumbosacral joint, the sacro-iliac joint or both. A sprain causes stretching and tearing of the ligaments, a space occurs, blood fills in the defect, granulations follow and finally scar tissue is formed. The result is loss of elasticity, hardness and finally abnormal relaxation. In severer trauma we have fractures and dislocations. A displacement forward of the lower lumbar vertebra on the sacrum is known as spondylesthesis. This condition may also be congenital.

The sacro-iliac joint has motion. The joint surfaces are covered with hyaline cartilage and we have a joint space, synovial membrane and synovial fluid. During pregnancy, the movement is increased because of relaxation of the ligaments around the joints. In the male during the 5th decade, the sacro-iliac joints become fused and therefore sacro-iliac sprains are absent.

Differentiation between sacro-iliac and lumbosacral

lesions causes the greatest difficulty. The following is a routine which I use for examination of the low back to differentiate between lumbosacral and sacro-iliac lesions. The patient stands on the floor completely stripped. He is asked to place one finger on the point of greatest pain. Notice is taken of the attitude of the spine, looking for scoliosis, lordosis and round back. He is asked to bend to the right side then left. Then reaching to the floor and backward bending. Finally rotation with you supporting the pelvis. Note is taken of the various limitations. Have the patient next sit back into a straight-back chair and try the straight leg raising test which is the best test I know for the sacro-iliac joint. Finally we ask if there is any change in sensations down the extremities.

Using the above method of examination the following points are brought out.

Lumbosacral Lesions

1. Patient points to pain in the midline at the lumbosacral region.
2. Stands straight with fixation of the spine in the lumbosacral region and rigidity of the muscles of this region.
3. All movements at the lumbosacral region are restricted and forward bending is at the hips.
4. In the sitting position stiff leg raising is equal and painless in both sides.
5. Pain is referred down the front of the thigh and inner side of the leg.

Sacro-iliac Lesions

1. Points to the side over the sacro-iliac joint affected.
2. Stands with spine deviated to one side usually away from the affected joint.
3. Forward bending takes place in the lumbar spine.
4. Straight leg raising on the affected side is restricted and painful.
5. Sciatic radiation follows down the back of the thigh and the anterolateral surface of the leg and foot. The term sciatic should be limited to true sciatic neuritis with absence of the ankle jerk.

The treatment in these traumatic conditions is conservative and operative. In the conservative treatment recumbency is indicated in acute painful cases. The patient is placed in a bed with a non-sagging mattress and the lower limbs flexed. These are gradually extended as the muscles become relaxed. In lumbosacral sprains a support should be placed under the lumbar spine.

Strapping with adhesive is useful and gives relief. In the lumbosacral sprain the strapping should be criss-crossed from the shoulder on one side across the back to the side of the thigh on the other and should be applied in the position of relief. In the sacro-iliac sprain the support should be applied around the ilium so that complete fixation is obtained. We also have at our command belts, corsets, braces and plaster of Paris jackets and corsets.

Physiotherapy: Most cases of back sprains become dissatisfied because the average physician will only treat them with strapping and medication. With physiotherapy you not only do something for the individual but when carried out properly it is our best method of relief. The usual methods are: 1. Infra-red heat. 2. Diathermy. 3. Massage. 4. Medical gymnastics.

The operative treatment in these cases should be used only as a last resort. This consists of fixation operations.

Arthritic and toxic conditions give low back pain. These include osteoarthritis and toxic conditions due to intestinal absorption or other foci of infection. The most common toxic condition which you will meet with is myogeloses, with definite indurations in the gluteal muscles. Myogeloses by derivation means "freezing of muscles" and deals with sharply localized areas of hardening in the muscles—chiefly the gluteal group. This subject is of great practical importance because the myogeloses are frequently the cause of low back pain, erroneously supposed to be due to neuritis, bursitis, arthritis, etc.

To palpate these areas of hardening, the muscles should be relaxed by appropriate posture, the skin should be oiled with albolene and the thumb used for palpation. The masses vary in length from ¼ to 4 cm. They are elongated in shape, running in the direction of the muscle fibers and are characteristically near the origin or insertion of the muscle. Microscopically, no pathological changes are found in the muscle thus differentiating the myogeloses sharply from true myositis and the so-called muscle scares. The change in the muscle consistency is due to a interference with the normal chemical processes in the muscle, resulting in an increase in the lactic acid of the muscle.

The myogeloses may be divided into four groups etiologically: 1. Exposure to cold. 2. Infections. 3. Overexertion. 4. Abnormal metabolism.

The treatment of myogeloses is: 1. In the removal of the cause if toxic or metabolic and 2. Daily physiotherapy in form of radiant heat and deep massage. Sensitive patients should be given a sedative one-half hour before the treatment. The skin and subcutaneous tissues show extensive ecchymosis after the deep massage so that the patient should be informed of this.

In these conditions, your physiotherapy in the form of heat and massage plus high colonic irrigations gives the best results. In the high colonic irrigation, we use 3 gallons of a 3 to 5% solution of sodium bicarbonate followed by the instillation of a 6 ounce solution of 40 to 60 grains of aspirin or 30 to 100 grains of sodium salicylate.

Bad Posture: Under this title, we include poor attitudes in standing, walking and sitting which put a strain on the lumbar muscles, ligaments and bones. In this group we have weak feet and flat feet and also the increased lordosis due to high heels. This group of cases is best treated with exercises and education. The feet should be treated with proper shoes, stockings and exercises.

The congenital anomalies which make the back susceptible to sprains are found in the 5th lumbar vertebra and upper sacral segment. Chief among these are the separate neural arch, spina bifida and the sacral articulation of a transverse process of the 5th lumbar vertebra. These do not as a rule cause trouble until alignment has been disturbed as a result of some postural defect or trauma. One often is asked why these anomalies do not make themselves evident earlier in life. The answer rests on the fact that in earlier life the muscles are strong enouh to hold the bones in position and also that with increasing weight, more weight is thrown on the anomalous bones thereby giving low back pain.

In closing, I wish to emphasize the fact that for the treatment of low back pains you have at your command the most useful and effective physical agents for the relief and cure of those conditions which cause this very common symptom of low back pain.

The Public Health Nurse and Physiotherapy

By Edna L. Foley, Superintendent, The Visiting Nurse Association of Chicago

Read at the Eleventh Annual Conference of the American Physiotherapy Association, Milwaukee, Wis., June 27, 1932

To borrow a definition from Miss Jessie L. Stevenson, Supervisor of our Orthopedic Division, "The public health nurse physical therapist is a graduate, registered nurse who has had experience in public health nursing plus special training in orthopedic nursing and physical therapy."

Some of you may be asking, "What is a public health nurse and why should this question be brought up here?" Actually, a public health nurse is any visiting nurse who leaves a home better than she found it and who goes into that home as a visiting nurse, not as a nurse who is able to stay with the patient or the family indefinitely. A public health nurse may be a school nurse, working entirely with school children; an infant welfare nurse, a tuberculosis nurse or a visiting nurse. By "visiting nurse" we usually designate those public health nurses who put bedside care on a par with instruction in personal and home hygiene.

Why are visiting nurses doing physical therapy? Because after the big epidemic of infantile paralysis in 1916, there were almost not physical therapists, and teachers of physical education and public health nurses alike were equally ignorant of good aftercare of infantile paralysis patients. In most cities, certainly in Chicago, there was no one to follow the children into their homes once quarantine was lifted, to give the necessary care for the prevention of deformities and also for the re-training of the muscles not wholly destroyed during the acute stages of the disease.

In the Brooklyn Visiting Nurse Association there was a special division of nurses working with crippled children, before the epidemic; therefore it was the most natural thing in the world that its progressive Superintendent, Miss Elizabeth Stringer, should look in every direction for instruction of this group when the now historic epidemic hit the Atlantic coast so severely. Under the State Department of Health, the state public health nurses were being assembled in special classes which were taught by the late Dr. Robert W. Lovett and Miss Sweeney, his assistant in the Children's Hospital of Boston. The Brooklyn Visiting Nurse Association turned to the State Department of Health when this tremendous increase in home care of crippled children came to them. But for several years the Brooklyn nurses were more active in getting children back to clinics and in teaching their parents the need for clinic care than in giving the treatments in the homes.

When two prominent physicians asked the Chicago Visiting Nurse Association to plan for the aftercare of crippled children who would be left in the wake of the epidemic, the Superintendent was sent on to New York to see what the East was doing with its thousands of cases. It is not surprising that after several years of the trial and error method, the new Committee on Aftercare and Study of Infantile Paralysis should have settled down to the careful preparation of a few nurses in physical therapy or muscle re-education.

At first we used muscle exercises with light massage; then we learned to apply heat by means largely of electric bakers. Later we realized that the prevention of deformities meant close observation of posture and instruction in correct posture. In time we adopted the use of hot salt baths and of tank and even swimming exercises. The first dispensary tank treatments in Chicago were given in a large tank in the basement of old Northwestern Dispensary. This was a present from Mr. Henry Pope and although the transportation of practically helpless patients back and forth, getting them up one flight of stairs in order that we might get them down another to the basement, proved both expensive and difficult, we soon discovered that the water treatment is psychologically enormously helpful. No matter what is proved by muscle examinations before and after tank treatments, most patients are so much more willing to try to help themselves after the buoyancy of the water has taught them that there is some muscle power in their afflicted muscles.

In 1918, Miss Alice Plastridge was sent to Chicago with a private patient. For two years she generously held classes with this special group of Visiting Nurses. Then she became part-time paid instructor and this position lasted until she went to Warm Springs as Chief Physical Therapist.

Our first Supervisor was sent to Boston for a special course in physiotherapy given under the auspices of Harvard Medical School and the Children's Hospital. Ever since, we have sent one or two nurses each year that the course has been given.

These nurses are given this advanced course after they have received the special preparation offered them in our own Association, which has included each year, classes with Miss Plastridge as well as the thorough training and teaching of our Supervisor, Miss Stevenson, her assistant, Miss Coralynn Davis, and other nurses who have had the special course. Several Visiting Nurses spend most of their time in Chicago's special public schools for crippled children; two have been given leave of absence to help out at Warm Springs. One spent a month at the Robert Breck Brigham Hospital in Boston, where Dr. Loring T. Swaim did his best to see that she got a very fair picture of the physical therapy treatment of arthritis. Several of the nurses have done good work in the evening classes of Northwestern University Medical School course in Physical Therapy.

Starting in a very small way, we have developed our preparation of Visiting Nurses who are going to do physical therapy, until now each has group instruction and field work under close supervision. Every nurse entering our Physical Therapy Division does so after a year or more of public health nursing experience in the general work. In this way the approach to the home, the knowledge of the parents' limitations as well as their ambitions for their children, are not new to the nurse who is going to devote her time to the specialty.

After two months of very intensive class work and observation, which includes practice work at a public school for crippled children and at least a day at the Children's Memorial Hospital, where a Visiting Nurse spends full time as its physical therapist, the nurses begin to see some patients in the districts, first with physical therapy nurses and then alone.

Class work and field work are closely correlated. Classes and lectures in the required subjects continue for two years and are supplemented by field work with all types of orthopedic conditions, such as the aftercare of poliomyelitis, cerebral palsy, birth palsy, congenital

deformities, fractures and injuries. A special lecture, clinic or group conference is given for the entire group once a month, so that all of the staff may keep abreast of the latest methods.

We never recommend that a nurse leave us for independent work in physical therapy until she has had at least two years of this kind of experience in this special field. For instance, during their first year, the nurses have not less than fifty hours of anatomy (a skeleton and muscle charts are used in each class period); eighteen hours of massage, twenty hours of muscle training and over forty hours in class work covering the treatment of different kinds of deforming disabilities. Our latest experiment has been physical therapy on the scars left after a harelip and cleft palate operation. Dr. Moorehead has been good enough to give the nurses a clinic and demonstration once or twice a year.

Lectures are given by the different orthopedic physicians; special clinics are held. We try to see that all of the nurses visit Durand Hospital in order to observe the care of acutely ill polio cases. These patients are later followed into their homes and seen in orthopedic clinics.

The pre-school work with spastic or cerebral palsy children at Spalding School is another field to which the nurses are assigned for special observation. It is rather interesting to know that most of these tiny patients came to the school through the Visiting Nurses.

Naturally this preparation is expensive but it is also so thorough that it has met with the approval of the Credentials Committee of the American Physiotherapy Association.

This work of the Visiting Nurses was never meant to replace Physical Therapy Departments in dispensaries and treatment centers. Brooklyn followed the Boston method of urging parents to take their children to recognized centers for treatment. There were no treatment centers in Chicago when we began the aftercare of Infantile children. There are too few such centers now. We are glad to send our children to them or to use our own work to supplement whatever treatment the youngsters may secure in them or to carry out orders given by the orthopedic surgeons who are watching the children regularly at dispensaries.

Chicago's special schools for crippled children have such complete Physical Therapy Departments, including tanks and at least one swimming pool, that they serve as treatment centers for hundreds of our children who have reached school age.

When this work was begun, transportation in Chicago was slow and distances great. Some of the children lived from eight to fifteen miles from the nearest clinic; consequently it was logical for us to begin by learning to give the treatments at home. There are many patients who are physically unable to get to a treatment center: practically all of the new polios who still need bed rest, fracture patients for whom even good transportation is a risk, many arthritic patients and other handicapped patients who are in bed or in wheel chairs.

Not a few our patients have home conditions that make any kind of treatment worthless unless a knowledge of them is share by the physician, the dispensary and the Visiting Nurse physical therapist. The special treatments must be adapted to the homes in which they are to be given. The posture of the patients in sleep, at work or at play must be watched, for although parents may report quite glibly to a clinic that a child sleeps alone and rests every day, several home visits will disclose that the child cannot possibly sleep alone and that by "rest" the mother means that it lies down in any chosen posture, in the busiest, noisiest part of the house (usually the kitchen), where it will have the most company.

We are constantly amazed by the ingenuity shown by some of the parents under the stimulus of the nurses' teaching. Our home-made exhibit will give you only a slight idea of the equipment parents have made—portable beds, specially constructed chairs, walkers, cradles and tanks, and all kinds of temporary arm, leg and chest splints for bed-patients. One father made a special tank for arm exercises for his two years old baby. This fitted inside the regular bath tub in order to prevent unnecessary slopping of the water onto the floor.

In quite poor homes, good physical therapy treatments can be given. A kitchen table may be used for the muscle examination, the massage and exercises. An old-fashioned laundry tub may be used for hot salt baths. Dry heat may be given by an inexpensive hand-baker. Sometimes a bathroom heater is pressed into service but both must be watched carefully and the last is particularly dangerous in the case of very little children. Sun baths are given whenever it is possible to get the sun on the spot but a sun bath in a modern city is not easy to plan. It reminds one of Browning's poem, "Never the time and the place and the loved one all together," for when the nurse has the sun, she rarely has the spot and the patient as well.

Instruction of the mothers in correct posture and in giving the exercises between the visits of the public health nurse, working out of games and other play plans so that little children will not be bored and easily fatigued by monotonous treatments, can all be more easily taught, sometimes, if the worker sees the environment in which the mother has to plan time for the exercises or for games or for both.

This teaching of parents to give proper care to their children twenty-four hours a day is more expensively done in individual homes than in groups but just as every handicapped child is an individual problem, so the special teaching of that child's mother or father must be planned to meet the youngster's needs. We cannot mass the children and plan exercises and usually we secure a better response from the mother if she sees how the exercises may be given in the very simple surroundings of the average home

It is undoubtedly cheaper to maintain treatment centers but after years of teaching, I know of but one city —Boston—where the children are taken back and forth regularly and promptly. In other cities where Visiting Nurse Associations have been obliged to undertake physical therapy, there is not that traditional trek back and forth to Children's Hospital or Massachusetts General and it is next to impossible to institute it. Other Visiting Nurse Associations have copied the Brooklyn and Chicago methods of having special instruction for experienced visiting nurses and having their supervisor a graduate nurse who is also a physical therapist. This has been carried out in Minneapolis, Milwaukee and Kansas City. In the Detroit Visiting Nurse Association, work with crippled children is under the immediate supervision of a physical therapist who is not a nurse.

It does not matter which method is followed so long as the work is well done and the children are benefitted. But by having a small group of nurses working daily with other nurses who enter all sorts of homes, there is a constant reminder that orthopedic defects of any description should be promptly reported. Attention to posture is more easily emphasized and more often remembered if visiting nurses are working with nurses who devote all of their time to crippled children. At

first we expected only our Infantile nurses (as we call our physical therapy nurses) to recognize incipient deformities and to prevent their becoming more severe—drop-foot, flexed knee and hip, outward rotation of the hip, etc. But now we expect every Visiting Nurse to recognize incorrect posture and to seek help and advice from the Infantile nurses.

Last fall a Visiting Nurse was giving care to a newborn baby when she noticed that it could not move its right arm. She telephoned the dispensary doctor who had delivered the baby. The baby was taken to the Orthopedic Department of the dispensary when it was two days old. An arm splint was applied and exercises ordered when the baby was five days old. After five months of massage and exercises given daily by the mother under the direction of the Visiting Nurse, the baby now has a normal right arm.

Recently a General Visiting Nurse referred a baby with club feet, to the Infantile Nurse. Splints made of tongue depressor blades bound together with adhesive and applied with bandages, held the feet snugly in the corrected position. Splints, massage and stretching exercises were started when the baby was three days old.

Prompt reporting of potential handicaps, followed by careful attention to posture, makes it possible to do much better preventive work. In a few states, congenital defects must be reported on the birth certificate.

Often a physical therapist who is also a public health nurse, interprets a physician's treatment and orders to the family much more easily because she understands the limitations of the household. By reporting the home conditions to the dispensary, she helps the physician and workers there to understand what the home lacks and what the special needs of the patient are.

By working with a recognized organization, the public health nurse physical therapist does a great deal to bring the needs of handicapped people, adults and children, constantly before an influential group of volunteer workers. Our special Committee has helped us in planning policies, in securing funds and in getting publicity and new friends. Our little blue booklet, as we call it—"A Message to Parents and Patients"—was perhaps the first simple and yet accurate statement on the aftercare of infantile paralysis that was given the public in pamphlet form. Other articles have been published from time to time by members of the Committee until now we have a fair collection of reprints which are of constant help to us in our work.

A good many patients who are seen in this way by Visiting Nurses, get regular, worth-while treatment. A mother with other small children cannot leave them while she takes the handicapped child to the dispensary nor can the average busy housewife afford time—and now, carfare—to take a child back and forth two or three times a week to a dispensary. Recently we discovered a polio patient whose mother spent three half-days a week going an incredible distance to a good clinic but the fatigue of both the mother and child were such that the parent became discouraged and went to her family doctor, who referred her to the Visiting Nurse Association.

The number of agencies referring patients to us, and the different types of patients whom the nurses are able to help in their own homes with physical therapy, both justify a department of this sort in a Visiting Nurse Association. It is an expensive department in some ways but it does not cost nearly so much as those disabled, neglected crippled children would cost our community years hence.

A nurse going into physical therapy should have an adequate background of academic and nursing education and if she has had twelve months or more of public health nursing, she will be just that much better equipped to take care of all sorts and conditions of patients.

I am frequently asked what the future in physical therapy is for the graduate nurse. Personally, I feel it is what she makes it after she has had the sort of experience that we are able to give, or a good graduate course plus a year of field work in any of the recognized courses throughout the United States.

Officers and Executive Committee of the American Physiotherapy Association, 1932-1933

President

MISS MARGARET S. CAMPBELL.....950 E. 59th St., Chicago, Ill.

Vice-Presidents

MISS MARION SWEEZEY.....Gary Hospital, Gary, Indiana

MISS MARTHA HINDMAN.....415 Hamm Bldg., St. Paul, Minn.

Treasurer

MISS MABEL HOLTON.....University Hospital, Ann Arbor, Mich.

Secretary

MISS LILLIAN BECKMAN.....7425 Harvard Ave., Chicago, Ill.

Members-at-Large

MISS FLORENCE PHENIX.....Dept. of Public Instruction, Madison, Wisconsin

MISS CATHERINE WORTHINGHAM.....340 S. 16th St., San Jose, California

Appointment Bureau

MISS EMILY GRIFFIN.....Monmouth Memorial Hospital, Long Branch, N. J.

Chairman Membership Committee

MISS MARION SWEEZEY.....Gary Hospital, Gary, Ind.

Chairman, Committee on Education

MISS MILDRED ELSON.....942 N. Jackson St., Milwaukee, Wisc.

Chairman, Committee on Publicity

MISS CHARLOTTE MORRISON.....303 East Chicago Ave., Chicago, Ill.

Chairman, Legislative Committee

MISS MARY E. HIBBLER.....450 E. 64th St., N. Y. C.

EDITORIALS

Since its beginning, the aim of the American Physiotherapy Association has been toward high standards and expansion. In spite of the economic conditions, the Association has grown both in scope and membership during the past year. Today physiotherapy has a recognized position in the professional world.

A profession whose efforts are focussed on the reconstruction of the physically handicapped, and whose workers are entrusted by the medical profession to carry on where they have left off, can only justify its existence by maintaining strictly scientific and ethical standards.

Physiotherapy is unique in itself in that there is endless routine not only through days and weeks, but often through months and years to accomplish its desired end. The physiotherapist must be dedicated to her work; she must have inborn patience and an undaunted spirit. And it is just such women that make up the American Physiotherapy Association.

It has been my privilege to work with different ones in the organization and I feel that it is a great honor as well as a grave responsibility to be its president. It is my earnest desire that during the time that we of the Middle West are responsible for the affairs of the Association it will continue to grow in spite of the uncertainty of the times. MARGARET S. CAMPBELL.

President's Address to the Eleventh Annual Convention of the American Physiotherapy Association

Milwaukee, Wisconsin, June 27-30, 1932

In conducting the business of the American Physiotherapy Association, the Executive Committee has been looking ahead to its future growth and professional standing.

There has been a steady increase in membership in the last year, and, in spite of the present economic conditions, it has been able to meet its financial obligations.

With an increasing membership there should be a growth in professional influence, and an increase in the efficiency of administration.

We have, individually, chosen Physiotherapy as a calling, because we have been inspired by the desire to be of service to others. We have also been convinced of the benefit derived from such treatments.

May we not carry our enthusiasm and the courage of our convictions still further, and bring before physicians and surgeons a more convincing conception of Physiotherapy as we feel it should be practiced?

The past year has shown a progress in the educational program, which, though not definitely completed, shows a step in raising and maintaining the standards of training which should be the determining factor in our membership requirements.

It is only by a careful selection of individuals in regard to personality and background, that the Schools of Physiotherapy may offer the best results in training.

It is only by a thorough preparation in training, and a constant adherence to ethical standards that we may hope for the desired recognition of the medical profession.

Rather than to drift into the legislative field as another of the many drugless cults with which medicine has to contend, this Association should set apart its profession as a true medical adjunct no less valuable to the medical field than are the registered pharmacist and the registered nurse.

Until Physiotherapy can be set apart from the aforesaid group, and be granted a place of its own, it cannot exert a desirable influence. Without proper registration signifying a standard of training there is no way by which the best training may be recognized.

For an organization of the size which we hope this Association may reach, within the near future, there should be adequate means for a more efficient administration of business. There should, also, be a more standardized membership requirement than the present one of graduation from certain approved schools. This would not only standardize the entire membership, but it would enable the irregularly trained, but experienced and highly efficient person to compete for membership.

We recommend, therefore, that the American Physiotherapy Association aim to accomplish the following:

First, to adhere closely to its standards of training and ethics so that it may be recognized as a valuable adjunct to the medical profession, and to exert its influence with the American Medical Association to the extent of obtaining its approval in any legislative steps it may take.

Second, to formulate and maintain an examination for membership requirement under an Educational Board which shall function with, or, as, the present Committee on Education.

Third, that it may establish centrally located headquarters, with a full time, paid, secretary-treasurer to meet the immediate demands of business in preparation for the approval of the Governing Board of elected officers, when they meet at stated intervals.

This will mean a greater financial demand upon the members of the Association but we should all give most generously to the Association in these early years of its growth. Such an interest should come first, if the individual members wish to be outstanding in a life profession.

The present Executive Committee wishes to thank the members of the Association for their loyal support during the past two years, and to extend to the new Committee its sincere good wishes for a successful administration in 1933 and 1934.

EDITH MONRO.

Report of the Eleventh Annual Convention June 27-30, 1932

The American Physiotherapy Association at its Eleventh Annual Convention was the guest this year of the Wisconsin Chapter. An unusually interesting program of visits and addresses was arranged in Milwaukee and Madison. Registration showed a total of 115, of which 66 were members.

The following Chapters reported either by delegates or in writing: Cleveland, Minnesota, Chicago, New York, Northern California, Oregon, Wisconsin, Massachusetts, Pennsylvania, Washington, Michigan, New Jersey and Western New York.

After the informal tea in the afternoon, the first formal session opened with an address of welcome from Dr. Herman C. Schumm of Milwaukee. Following this, Miss Edna S. Foley, of the Visiting Nurse Association of Chicago and Mrs. Erle Ingram, of the Crippled Children's Division, of the Wisconsin State Department of Education, gave very interesting accounts of their work.

A visit to the Junior League Curative Workshop gave an excellent opportunity for observing the combined treatment of Occupational Therapy and Physiotherapy under ideal cooperative methods directed by Miss Marjorie Taylor and Miss Mildred Elson.

The trip to Madison, where the Association was greeted by Dr. Helen Denniston, provided a most interesting session on Poliomyelitis with a presentation of cases and addresses by Dr. Robert E. Burns, Dr. William D. Stoval, and Dr. W. J. Meek, and closed with a visit to the Orthopedic Hospital for children.

The speakers at the Milwaukee sessions were Dr. John W. Powers, Treatment of Un-united Fractures of the Neck of the Femur, Dr. Walter P. Blount, Congenital Dislocation of the Hip, Dr. Eben J. Carey, Normal and Abnormal Muscle Pull in Relation to Curvature of the Spine, and Dr. Harry Tabachnick, Psychic Factors in Rehabilitation.

At the banquet which closed the convention the Association was most fortunate in having as its guest, Dr. Frederick J. Gaenslen, who spoke upon the Relation of Physical Therapy to Medicine and Surgery. It is hoped that these addresses may be obtained later for publication.

An interesting feature of the program was a symposium upon abdominal conditions and their treatment, led by Miss Josephine L. Rathbone and discussed by Dr. G. G. Deaver and Dr. Edmund Jacobson of Chicago.

The professional and commercial exhibits were much larger than the first attempt of the year before. The chairman, Miss Elizabeth Jones, who solicited material, deserves great credit for their success. We are especially indebted to Dr. J. S. Coulter of Chicago for his contribution of old prints and pictures depicting early uses of Physiotherapy.

The Officers' Conference was a very helpful round-table discussion of National Association affairs and of the Chapters' part in our national program.

The Association acknowledges with appreciation the use of the following films: From Dr. Arthur Steindler, Iowa City, Iowa: The Use of the Compensatory Curve in the Treatment of Scoliosis. From Miss Alice L. Plastridge of Warms Springs, Ga.: The Work of the Warm Springs Foundation. From the Spalding School, Chicago, Ill.: The Work of the School.

Business Program of the Convention

TUESDAY, JUNE 28, 1932

This session opened with the reading of letters and telegrams of greeting from the Milwaukee Chamber of Commerce; The Chartered Society of Manage and Medical Gymnastics, of London; Miss Dorothea M. Beck of Montclair, New Jersey; The Northern California Chapter; Miss Hazel Furscott of San Francisco, California; and Miss Mary McMillan of Boston, Massachusetts.

Reports of standing committees and officers:

Report of the Executive Committee, June, 1931–June, 1932

The eleventh year of business for the American Physiotherapy Association began with the close of the Tenth Annual Convention held in Philadelphia, Pa., June, 1931.

The first regular meeting of the Executive Committee, held in Montclair, N. J., in August, determined the meeting place for the next convention.

Invitations from the Northern California, Texas, and Wisconsin Chapters were extended to the Association, and the last was accepted as being the more central point of the West.

At this meeting, vacancies were filled in two Standing Committees: Chairman, Bureau of Appointments, Miss Clara M. Eisenbrey, Boston Mass.; Chairman, Committee on Education, Miss Mildred Elson, Milwaukee, Wis. A beginning was made, also, in the business and program of the next convention.

A special meeting with the Chairman of the Committee on Education was called in Boston in October, which enabled the two committees to go over the educational program for the year which will be reported later by Miss Elson.

With the help of the Advisory Council, a suggested re-arrangement of the school curriculum was prepared, and later presented to a representative of the Council on Physical Therapy of the American Medical Association for approval.

The December and March meetings, held in Springfield, Mass., were devoted to the final preparation of convention business, voting on applications for membership, and the consideration of schools and courses of training.

At this time Miss Mathea Boxeth of New York, tendered her resignation as Chairman of the Committee on Legislation to take effect at the close of the fiscal year. Miss Mary E. Hibbler of New York has accepted the appointment to take her place.

A report from Miss Helen Kaiser, chairman of the Standard Records Committee, states that the response to the appeal for material has been so slow that it has been decided to extend the contest another year.

For the first time in its history, this Association received an invitation from the American Medical Association to assist in a demonstration of the use of Physiotherapy in the treatment of arthritis at their Annual Convention in New Orleans, in May.

Miss Charlotte Morrison, of Chicago, Chairman of the Committee on Publicity and Mrs. Margaret Stewart, of New Orleans were appointed as delegates to work under the direction of the Council on Physical Therapy of the American Medical Association, and the Committee on the Control of Rheumatism. Miss Alice L. Plastridge of Warm Springs, Georgia, offered her services with this Committee.

The Executive Committee feels that this has been a most valuable bit of publicity for the Association.

The final meeting of the year, held in Milwaukee, Wis., just before the opening of this session, has completed the business program. At this meeting, the Chairman of the Bureau of Appointments presented her resignation, which will be held over to be acted upon by the new Executive Committee.

The Council of Physical Therapy of the American Medical Association recommends that this Association outline the standards in the training and practice of Physiotherapy which it considers essential in the preparation of laws governing such a practice; this outline to be forwarded to the American Medical Association to be used in connection with the formulating of a model state law.

In a summary of the year's program, the Executive Committee recommends that the Eleventh Annual Convention of the American Physiotherapy Association embrace the following business:

The discussion and possible adoption of the amendments to the Constitution and By-Laws previously prepared and published in the PHYSIOTHERAPY REVIEW.

A further discussion of the rearrangement of the school curriculum.

A discussion followed by a vote upon the rule governing the acceptance of non-citizens of the United States as members in the Association.

The preparation of an outline giving the standards of training and practice of Physiotherapy relative to state laws governing such practice.

The Executive Committee acknowledges with appreciation the hospitality of the Wisconsin Chapter under the Chairmanship of Miss B. Claire Miller, who has had charge of the arrangements for the entertainment of the Association during this convention period.

Respectfully submitted,

EDITH MONRO,
Chairman of the Executive Committee.

Report of the Secretary, June, 1932

The Executive Committee held four regular meetings during the year 1931-1932, in Montclair, N. J., in August; in Springfield, Mass., in December and in March; and in Milwaukee in June. The following matters of business have been transacted at these meetings:

I. The following schools have been placed upon the approved list, upon the recommendation of the Education Committee: The Posse-Nissen School, Boston, Mass.; The College of William and Mary, Richmond, Va.; The Sargent School of Physical Education, of the School of Education, Boston University, Boston, Mass.; N. Y. University and the Hospital of the Ruptured and Crippled, New York City.

II. Appointments have been made to standing committees as vacancies have occurred: Education Committee—Mildred Elson; Legislative Committee—Mary Hibbler; Bureau of Appointments—Clara Eisenbrey.

III. In cooperation with the Education Committee, this committee has been working upon a revision of the curriculum for approved courses.

IV. There has been an increase in membership during the past year: Total Membership 774; Senior Membership, 668; Junior Membership, 72; Associate Membership, 26; Honorary Membership, 8. Increase over the 1931 enrollment, 98.

Respectfully submitted,
CONSTANCE K. GREENE, Secretary.

Audit Report, April 30, 1932

May 20, 1932.

American Physiotherapy Association,
Ann Arbor, Mich.

Ladies:

Upon instruction received from Miss Mabel E. Holton, Treasurer of the American Physiotherapy Association, we have made an audit of her accounts for the year May 1, 1931, to April 30, 1932, and herewith submit our report.

During the course of the audit, all recorded cash receipts were traced to deposit in the banks. All disbursements were examined and proper authority for each was found to be on file. The bank balances were verified with the depository.

Exhibit A presents a Statement of Cash Receipts and Disbursements for the year ended April 30, 1932. Total cash received from all sources during the year amounted to $4,340.04. This amount excludes a one year subscription to the PHYSIOTHERAPY REVIEW. The check was on hand but was omitted from the report in view of the fact that it was an advance subscription covering the year July 1, 1932, to June 30, 1933, and hence was more properly applicable to next year's transactions. Total disbursements including bad checks returned, amounted to $4,090.05. The excess of receipts over disbursements was $249.99, which, added to the balance of cash on hand on May 1, 1931, totals $2,082.70, the balance of cash on hand April 30, 1932.

Schedule A-1 presents the balance of cash on hand in the various accounts.

The only transactions affecting the savings account were credits amounting to $14.43 of interest earned during the year.

Very truly yours,
Paton and Ross, F. E. Ross.

STATEMENT OF CASH RECEIPTS AND DISBURSEMENTS
MAY 1, 1931, TO APRIL 30, 1932

Receipts			
Membership Dues:			
Senior Members	$3,322.00		
Junior Members	196.00		
Associate Members	50.00	$3,568.00	
Physiotherapy Review:			
Subscriptions	$ 367.50		
Sales of Extra Copies	26.21		
Sales of Reprints	56.87		
Advertising	202.53	653.11	
Convention Registration		104.50	
Interest Income		14.43	
Total Receipts			$4,340.04
Disbursements			
Advertising		$ 111.45	
Auditing		45.00	
Bureau of Appointments		31.51	
Committee on Education		116.85	
Convention:			
Executive Committee Rooms	$ 108.70		
Reporting of Proceedings	168.60		
Rental of Projecting Lantern, Screen, etc.	20.00		
Expenses of Skit Presented	10.49		
Traveling and Miscellaneous	194.95	502.74	
Die for New Pin		40.00	
Executive Committee Expenses		189.01	
Files		51.30	
Miscellaneous Supplies		2.00	
Office Expense, Postage, etc.		102.21	
Printing:			
Physiotherapy Review	$2,520.69		
Reprints	74.87		
Stationery	33.60		
Supplies	161.00		
Miscellaneous	20.25	2,810.41	
Refunds:			
Membership Dues:			
Senior	$ 10.00		
Associate	4.00	14.00	
Returned Checks (N. S. F., Account Closed, etc.):			
Membership Dues—Senior	$ 5.00		
Subscriptions—Physiotherapy Review	10.00	15.00	
School Committee Survey		45.07	
Treasurer's Bond		5.00	
Typing		8.50	
Total Disbursements			4,090.05
Excess of Receipts Over Disbursements			$ 249.99
Add: Cash on Hand, May 1, 1931			1,832.71
Cash on Hand, April 30, 1932—Schedule A-1			$2,082.70

BANK RECONCILIATIONS AND CASH BALANCES, APRIL 30, 1932

Ann Arbor Savings Bank—Commercial Account		
Balance per Bank Statement, April 30, 1932	$1,577.93	
Less: Check No. 137 Outstanding	31.55	
Balance per Books, April 30, 1932		$1,546.38
Ann Arbor Savings Bank—Savings Account No. 6261		
Balance per Bank Pass Book, April 30, 1932	$ 536.32	
Balance per Books, April 30, 1932		536.32
Total Cash on Hand, April 30, 1932		$2,082.70

Treasurer's Report—1932

I am pleased to report that the membership of the American Physiotherapy Association is again showing a substantial increase over that of previous years. We now have a total membership of 774 distributed as follows: Senior, 668; Junior, 72; Associate, 26; Honorary, 8.

This is an increase of 98 over 1931. Of that number 50 have paid dues for the coming year. Twenty-five of these are new members for the year ending April 30, 1933.

A few comparative figures from the auditor's report are as follows: Increased revenue from dues, $433.00; increased revenue from REVIEW, $96.84 (subscriptions—extra copies); increased revenue from advertising, $5.05; increased cost of REVIEW, $806.03.

The May, 1932, report shows $78.63 received and $704.65 paid out, leaving a balance in the treasury of $920.36. The June report is not complete but on June 24, 1932, a total of $112.50 had been received, $306.94 disbursed, leaving a balance in the treasury of $725.92.

May I again thank all of the treasurers of the chapters and the individual members who have given me such splendid cooperation.

Respectfully submitted.

MABEL E. HOLTON.

Report of Bureau of Appointments

In making my report of the Appointment Bureau for the past eight months I wish to do more than report the number of applications for positions, and the number of requests for applicants. That is concisely reported as 74 to 14.

After four months' work in the Appointment Bureau I observed that our returns from our advertisements in the American Medical Journal and the Modern Hospital consisted of innumerable requests for aid in securing positions, from Nurses, X-ray Technicians, and Masseuses, but none from Physicians, or Hospitals requiring the services of members of The American Physiotherapy Association.

With the approval of the Executive Committee I discontinued those two advertisements, incidentally saving approximately one hundred dollars, and planned to make personal contact with the individual Physician and Hospital; bringing our national organization to their attention by sending out cards announcing the Appointment Bureau and stating the standards of our association.

In February, fifty of these cards were sent to each chapter with the request that they be sent out to representative persons in that locality; after four months the results of that endeavor are tabulated below:

Sent out cards as requested	Did not sent out cards.	Received no reply.
Cleveland	Northern California	Chicago
Massachusetts	New Jersey	Rhode Island
Michigan	New York	Southern California
Minnesota	Oregon	Texas
Washington, D. C.	Pennsylvania	Western New York
Washington State		

The following have a local registry: Minnesota, Northern California, New Jersey, New York, Pennsylvania.

It was also suggested that the chapters could assist by keeping a catalogue of the qualifications, training and experience of each of its members, and sending it to the national Appointment Bureau. This would afford a central bureau of information concerning all of our members, and would be invaluable.

With this information concerning each member recorded in the national Appointment Bureau, the local registries could write saying "we have such and such a position *describing it fully*, can you suggest some candidates?" The names of suitable persons would be sent and the local registries could make the personal contact. As it is now, some of the chapter registries seem to be trying to retain the vacant positions for members of their own chapter, instead of getting the right person for the right position. I have learned that many who have a position would like to change for one reason or another, a different type of work, a change of locality, or some family reason.

My suggestion is that the Appointment Bureau of the American Physiotherapy Association be permanently located with the publication of the PHYSIOTHERAPY REVIEW, and that the Manager of the REVIEW be also the Manager of the Appointment Bureau, and receive a salary for work that is of value to each member of the Association.

With this report I present my resignation as Director of the Appointment Bureau.

Respectfully submitted,

CLARA M. EISENBREY.

Report of The Physiotherapy Review

The year 1932 sees THE REVIEW starting on its eleventh year of publication, with something over nine hundred names on the mailing list.

This year we again followed the custom of having the chapters contribute to a specific number and thereby making it theirs. In this way not only has THE REVIEW gained splendid articles but we hope that the chapters have felt themselves more intimately a part of the whole. In the coming year we expect to follow it again and to have an issue for the members-at-large. There is a wealth of valuable material among ourselves which can be passed on to others through its pages.

It is a pleasure at this time to acknowledge the work, cooperation and contributions of Miss Beard, Miss Morrison and Doctor Coulter. More than a little the success of the magazine depends upon them. It is also a pleasure to welcome Miss Ida May Hazenhyer to the staff as Associate Editor.

Respectfully submitted.

DOROTHEA M. BECK, Editor.

From a business standpoint THE PHYSIOTHERAPY REVIEW has shown progress in the past year. The increase in subscriptions has been 40%. At the present there are 140 paid subscriptions. Geographically these reach 24 states and 8 foreign countries. The subscribers include: Hospitals, 10; Medical schools, 3; Other schools, 20; Medical Society Libraries, 9; Boards of Education, 3; Clinics, 7; Visiting Nurse Associations, 6; Public Welfare Boards, 1; Departments of O. T,. 2; Physicians, 18; Lay individuals, 52.

The increase in advertising is evident to all readers. This is indeed gratifying, in these adverse times when all firms are curtailing expenses, and is due in most part to the personal solicitation made possible by the cooperation of the various chapters. I wish at this time to thank these members for their contributions and also those whose efforts were unsuccessful, for their interest.

With added effort on the part of members to solicit subscriptions and continued cooperation and personal contact with prospective firms, we are certain the advertising pages and the subscription list will be increased, and the added income from these sources will make possible a better magazine.

Respectfully submitted,

GERTRUDE BEARD, General Manager.

Committee on Education for the Year 1931-1932

During the past year, five new schools have been added to our list:

1. College of William and Mary (Extension Division, Richmond, Va.), Dr. Thomas Wheeldon. Prerequisites: Graduation from an accredited school of nursing; accredited school of physical education, fourth year major in physical education. Subjects not given in nursing course which are required for Physical Education must be made up. Analysis: Anatomy 320 hours—240 being dissection. Other theory in accordance with our requirements. Practice hours in excess of our requirement. Total 1325 hours—681 theory—644 practice. A new four year undergraduate course is being planned with an additional three months of practice following

graduation, at the end of which a certificate in Physical Therapy will be given.

2. The Hospital for the Ruptured and Crippled. (Third year out of residence, New York University.) Dr. K. G. Hansson. Analysis: Anatomy, Physiology, Chemistry, Physics, Kinesiology and Behaviorism given as prerequisites at New York University. Sixty-four additional anatomy hours and twelve hours of dissection, Physiology and Kinesiology are given by Dr. Hansson, with remaining Theory. Four hours daily are spent in practice. Total 1007—Theory 367—Clinic 640.

3. Sargent School of Physical Education. Boston University School of Education. 6 Everett Street, Cambridge, Mass. Four year undergraduate course leading to a B. S. degree. Analysis: Theory—600 hours, including additional subjects of Neurology, Biology and Bandaging. Laboratory—275 including 90 of dissection in Anatomy. Clinical practice—390. Recommendations of the Committee on Education: 1. That anatomy hours be increased. 2. That closer supervision of practice work be maintanied. Approved by the Executive Committee with additional recommendations: 1. That hospital practice be rated three hours to one credit instead of two. 2. That some one medical instructor be appointed medical head. At present, Dean Begg of Boston University Medical School is actively interested in the course.

4. Posse Nissen School of Physical Education, 779 Beacon Street, Boston, Mass., Mrs. Constance Shields. Three year undergraduate course. Analysis: Anatomy, 160. Kinesiology, 120. Muscle training, 30. Other Theory subjects covered except for Physics and Chemistry which are prerequisites. Total hours, 1200. School has stated its willingness to continue to raise its standards and a four year course is planned to start in two years.

5. Washington School of Physical Education, Washington, District of Columbia. Nine months, Post Graduate Course. Prerequisites: Physical Education graduate or registered nurse. Analysis: Theory hours in accordance with our requirements except for Physics and Chemistry as prerequisites. Credit is given for these subjects, but facilities are being planned so that in another year they will be given. Practice hours are lacking in Electro Therapy. Total hours 1000—Theory 665. Laboratory and Practice 330. Because of the recommendation of the Educational Committee member from Washington, D. C., approval was given with the following recommendations: 1. That Physics and Chemistry be added to the course. 2. That practice hours be augmented to meet requirements of the American Physiotherapy Association. The Chicago Visiting Nurse Association submitted an outline of a course of study extending over two years given to nurses in their orthopedic division. The work was personally inspected and a very thorough course of training was found to be given. Opportunities for night work at Northwestern in courses especially designed for Physiotherapists are also available. It was recommended that at the completion of their two year period the nurses whose training and experience were equal to our requirements be considered by the Executive Committee for membership.

Courses temporarily discontinued: 1. Beth Israel Hospital, Newark, N. J. 2. Tacoma General Hospital, Tacoma, Wash. 3. University of Iowa, Iowa City, Iowa. Reason: 1. Lack of students. 2. Cost of course.

Course discontinued: Philadelphia Orthopedic. Curriculum inadequate.

Other changes: Walter Reed, Washington, District of Columbia. Prerequisite requirements raised to graduation from a four year college course majoring in physical education. Physical requirement: Applicant must not be less than 65 inches in height or weigh less than 125 pounds.

Harvard Medical School, No. 445, has been lengthened to nine months.

There have been several inquiries from universities and hospitals, concerning courses, which have not yet filed application blanks. There seems to be a decided tendency for hospital courses to become closer affiliated with medical schools and universities. Schools are planning their curricula with more care. Tentative outlines and proposed changes are submitted to the Committee on Education for criticism and advice. This cooperation is of great aid to us as well as to the schools.

The American Nurses' Association and the American Physical Education Association have been most helpful and cooperative. A copy of Physical Education Curriculum in Professional Schools, prepared by the Committee on Curriculum of the American Physical Education Association, was purchased. It has been of great value in comparing curricula. The American Physical Education Association does not approve or accredit schools. They must meet standards set by law in the individual state. A list of nursing schools meeting minimum requirements set by law in the individual state is also kept on file.

It is interesting to note that the Minnesota State Board of Medical Examiners will not license an applicant unless this Association can approve his training.

A copy of our curriculum and a list of our schools and courses were sent to the United States Department of the Interior, Education Division, and to the National Education Association.

Committee members from the chapters have been very cooperative. Their recommendations and advice concerning courses and problems in their state have aided this committee materially. A response to a request for information was made in almost every case. Through their letters it is brought to mind more forcibly that the problems of education, and practice of Physical Therapy, are many and varied in each section of the Country.

It is the feeling of this committee, that, before adopting further changes in our curriculum, a very careful survey of our schools and courses be made. Similar studies by the American Nurses Association, the American Physical Education Association and the American Occupational Therapy Association have been very helpful and enlightening.

We recommend that a committee be appointed to make this survey of all courses, long and short, to be presented, if possible, at the Convention in 1933. We feel it is time for us to ask the schools for their reactions to their and our curricula, the faults and the good points, so that our minimum requirements will be less arbitrarily fixed by a small group. This will augment and complete the survey begun by Miss M. Irvine.

In the meantime a reapplication blank has been prepared so that our list of schools, which have shown cooperation with the Commitee on Education may be kept up to date.

We earnestly appeal to the chapters to continue to appoint to the Committee on Education members who have cooperated as well as the present group. We are as strong as our weakest link, and it falls upon the chapter member to give very material aid in keeping us in touch with the local education problems which soon become national problems.

Respectfully submitted,

MILDRED ELSON, Chairman.

Report of the Legislative Committee

I am very sorry not to be able to be at the convention this June and to be able to read this report. The legislative committee has had a very quiet year. Most of the chapters have reported that no effort has been made to present any bill to their state legislators.

Northern California reports: On Feb. 16, 1932, having been requested by Miss Boxeth, National Chairman of the Legislative Committee, to urge the passage of Bill H. R. 155, a bill to amend section 200 of the World War Veteran Act of 1924, letters were written to Representative H. E. Barbour of the 7th District California and to Representative Florence Kahn of our own district, the 4th. Their prompt answers assured us of their interest, though no action had been taken. We were fortunate in the fact that Representative Barbour is the cousin of our local president, Miss Tuggle, and Mrs. Kahn a great family friend. I hereby incorporate their answers as a part of this report.

February 22, 1932.

Miss Julia L. Tuggle,
2880 Jackson St., San Francisco, Calif.
My dear Julia:

I have your letters of Feb. 16, relative to Representative Crail's bill, H. R. 155, to amend section 200 of the World War Veterans Act. No action has as yet been taken by the committee to which this bill was referred, but I am pleased to have the opinion of yourself and the American Physiotherapy Association in regard to it, and shall bear your interest in mind should the measure come before the House of Representatives.

All are well here and join in best wishes.

Sincerely yours,

H. E. BARBOUR.

March 23, 1932.

Mrs. Julia L. Tuggle, President,
Northern California Chapter,
American Physiotherapy Association,
2880 Jackson St., San Francisco, Calif.
Dear Mrs. Tuggle:

This is to acknowledge receipt of your letter of Feb. 16, conveying the interest of your organization in the enactment of H. R. 155, copy of which you will find enclosed.

The Committee on World War Veterans legislation has not as yet taken any action on this measure.

However, I am very glad to know of your interest in the bill and you may be assured that, when it comes before the House, it will receive my sympathetic consideration.

Sincerely yours,

FLORENCE P. KAHN.

The only other activity of the Legislative committee of our chapter was at the beginning of this fiscal year. A man named Morris was canvassing every masseur, masseuse, physiotherapist, maturopath, etc., to force them to contribute to a bill to be passed to Sacramento to exclude any use of massage in treatment unless the operator had passed certain examinations which virtually meant going to a school run by Morris and paying around $500.00 in fees for license, examination, etc. This vicious bill also included a section allowing those who had such license to prescribe narcotics and on investigation it was found to be backed by prostitutes advertising in the name of massage establishments.

The California Medical Association and the State Board of Medical License called on our chapter for protest. Telegrams were sent from the local chapter, the National Association and I sent a personal one. Dr. Pinkham, director of the State Board of Medical License called me up from Sacramento two hours later to say that the bill was thrown out of the Committee and so did not even get to the vote of the Assembly.

As our policy has been that of no legislation this chapter has done nothing the past year but the above reported work.

Respectfully submitted,
HAZEL E. FURSCOTT, Local Chairman.

The New York Chapter reports that the registered physiotherapists introduced an amendment to bill 991 which was read once and referred to the Committee of Public Education where it was killed. This amendment would give a license to practice physiotherapy without the supervision of a licensed physician.

A Texas Chapter member reported that she had been accused indirectly of practicing medicine, having opened up her own office. Article 5745 of the Medical Practice Act of Texas as amended by the 38th Legislature 1923, states:

Who regards as practicing medicine:

Any person shall be regarded as practicing medicine within the meaning of this law:

1. Who shall publicly profess to be a physician or surgeon and shall treat, or offer to treat, any disease or disorder, mental or physical, or any deformity or injury, by any system or method, or to effect cures thereof.

2. Who shall treat, or offer to treat, any disease or disorder, mental or physical, or any physical deformity or injury by any system or method, or to effect cure thereof and charge therefor, directly or indirectly, money or compensation.

She maintained she was not a licensed physician and did not come under this law. Also all treatments were given by order of a physician. The legislative committee advised her to interest the doctors in presenting this case to the State Board. She reports that no medical association has power to control the practice of physiotherapy as it is under the control of the State Board. I have heard nothing further as to whether the chapter has made any effort to present a bill.

Miss Vogel, President of District of Columbia Chapter, A. P. A., wrote that she had investigated Bill H. R. 155, a bill to amend section 200 of the World War Veteran Act of 1924. Mr. Crail who was presenting this bill had included physiotherapy aides who served overseas in the World War. Letters were written to all chapter chairmen that they get in touch with their State Representatives. Most of the chapters replied that they had received very prompt and courteous replies. Letters were written to Mr. Crail thanking him for including physiotherapy in his bill, also asking him to include those aides who served in other than Base Hospitals as very little or no physiotherapy was given in the Base Hospitals. Mr. Crail answered saying he appreciated hearing from us and wishes to thank us for writing him on this measure. Also that our suggestion would have his earnest and careful consideration.

In regard to legislation, there has been no measure taken to establish any license.

The Bureau of Legal Medicine and Legislation, as reported in the Federation Bulletin, in their survey of state legislation found: that it was encouraging to note the definite decrease in number of bills introduced and legislation enacted in the interest of cultests; as compared with former years. Also that the professional and educational requirements of all practitioners are gradually being advanced to higher standards.

With the medical profession demanding higher standards of education and encouraging the establishing of

schools to meet the requirements for qualified technicians, I feel, and from letters received from chapter chairmen that they agree with me, it is better not to become involved in politics until we are sure we are going to gain a permanent future.

This being my last report, I wish to take this opportunity to express my appreciation of the splendid cooperation I have received from the Association.

Respectfully submitted,

MATHEA A. BOXETH,
Chairman of the Legislative Committee.

Committee on Publicity for the Year 1931-1932

I am glad in making this year's report of chapter activities in publicity to be able to record very definite steps forward in making our aims and standards known to the medical profession. And above all, making it known to them that we are here to serve them wherever possible.

May I emphasize again that this committee, its members being composed of chapter chairmen, can function only through its chapters. We were able to function for the National Association this year through the project offered from the Chicago Chapter.

Through personal contact with members of the Council of Physical Therapy of the American Medical Association, it was learned that our assistance would be welcomed at the New Orleans Session, annual meeting of the American Medical Association, and at the Centennial Exposition in 1933 in Chicago. Chicago Chapter formally presented the plan to the Executive Committee of our association and the one project has been successfully completed. The Chicago Chapter report, and the following report, made by the national chairman to the Executive Committee, will give the details.

NEW ORLEANS SESSION, AMERICAN MEDICAL ASSOCIATION—Exhibit on Physical Therapy: A special exhibit of physical therapy was presented by the Committee on Scientific Exhibit of the Board of Trustees, through a committee composed of K. G. Hansson, New York, C. L. Lowman, Los Angeles, and John S. Coulter, Chairman, Chicago, Illinois.

The exhibit was correlated with the exhibits of the American Committee for the Control of Rheumatism, and of the Council on Physical Therapy of the American Medical Association. The factors influencing the onset of and recovery from chronic arthritis were given by the members of the Committee for the Control of Rheumatism. Immediately following, was the demonstration in the Physical Therapy section showing the position of rest and the principles underlying the use of heat, massage and exercise.

The Physical Therapy exhibit was grouped under four headings: Hydrotherapy and Thermotherapy: F. H. Krusen, Philadelphia. Massage: W. S. Peck, Ann Arbor; U. S. Giles and N. H. Polmer, New Orleans. Hydrogymnastics: C. L. Lowman, Los Angeles, and K. G. Hansson, New York. Theropeutic exercise: C. O. Molander, and J. S. Coulter, Chicago.

We were fortunate in having the help of Alice Plastridge (sent down by the Warm Springs Foundation) to assist Dr. Lowman and Dr. Hansson in the hydrogymnastic booth. Mrs. Stewart and I filled in wherever we could be of use in the other booths.

Respectfully submitted,

CHARLOTTE MORRISON.

CLEVELAND CHAPTER—No report.

CHICAGO CHAPTER—Three projects were planned and submitted to the Executive Committee of the American Physiotherapy Association, for its approval and financial support.

The first, a plan to send out bulletins setting forth the opportunities of Physical Therapy as a profession, to accredited Schools of Physical Education and Nurses' Training Schools, was not approved. The National Executive Committee, while approving of the idea, felt that owing to general economic conditions, students should not be encouraged to enter a profession requiring further study, time and expense, after which, positions might not be available.

The second, a plan to operate a booth in conjunction with the Council of Physical Therapy, at the Annual Meeting of the American Medical Association, in New Orleans, was approved and has been carried out. Miss Charlotte Morrison, who was sent from our chapter, by the National Association, and Mrs. John Stewart a member of the Association, living in New Orleans, assisted the Council in their demonstrations setting forth some of the value of Physical Therapy to the Medical Profession. We believe and hope that some of the sceptical have been won over to our ranks.

The third, a plan to offer similar services, in connection with the Centennial Exposition in 1933, has been approved by the National Executive Committee. No definite plans have yet been made for this project, but we feel that any help we can give the Council on Physical Therapy, showing the importance of our profession to interested persons visiting the Exposition, will be well worth the effort which must necessarily be expended.

Respectfully Submitted,

MARIEN SWEEZEY, Chairman.

MINNESOTA CHAPTER—no report.

NEW YORK CHAPTER—New York has not had a Publicity Committee this year, partly at least, because the legal problem here is so difficult that publicity, even among the medical profession, is somewhat precarious.

However, we have made certain strides that have given us recognition in the profession. Our regular meetings and our series of lectures were listed in "Medical Week" which is the official bulletin for the County Medical Society, and is sent to all its members. The New York Physical Therapy Society, a medical organization, sent out notices of our local Vocational Bureau with their own notices which gave us definite recognition by them.

The faculty at the Hospital for the Ruptured and Crippled has urged their graduates in physical therapy to join our association in preference to any other.

We attempted to make contacts with the city which would recognize our members as capable of caring for the cases of poliomyelitis from the recent epidemic, under the direction of city physicians. This however was not successful for all after care was under the direction of the Visiting Nurse Association.

I am sorry not to be able to report greater publicity activity.

Respectfully submitted,

MARY ELIZABETH HIBBLER, President.

NORTHERN CALIFORNIA—The only publicity that I can report is the sending of subscriptions to the Stanford Medical School and the University of California Medical School.

Respectfully submitted,

CATHERINE WORTHINGHAM.

SOUTHERN CALIFORNIA—This Chapter,

through the secretary, paid for an announcement of our vocational representative, stating our standards, in the Los Angeles' County Medical Magazine.

The girls received the cards from the National Association to be mailed to any doctors they thought might be interested.

Respectfully submitted,
EMMA LITZENBERG, Chairman.

OREGON CHAPTER—Oregon Physiotherapy ranks are sadly depleted with several girls out of positions. There are just seven of us actively engaged in Physiotherapy at present.

The State Accident Commission which at one time employed seven or eight graduate physiotherapists now with over fifty percent of the work to do, employs one accredited physiotherapist. The work being done by untrained graduate nurses.

There is a tendency among the medical men who should use physiotherapy, to employ a nurse to do the work. Giving instruction in electrotherapy seems sufficient.

As to publicity; we have had the very kind assistance of the secretary of the State Medical Society in several ways.

The Oregon Chapter was invited and belongs now to the State Federation of Professional Societies which was organized under the same secretary of the State Medical Society.

Respectfully submitted,
MIRIAM R. EWING, Corresponding Secretary.

RHODE ISLAND CHAPTER—no report.

WISCONSIN CHAPTER—The Wisconsin Chapter of the American Physiotherapy Association has kept in the limelight of publicity primarily concerning the annual convention of the Association. We have been most happy to act as the hostess chapter and have endeavored to give ourselves, as physiotherapists, as much press space as possible.

We have made the usual yearly contributions for our state to THE PHYSIOTHERAPY REVIEW. This has been the second year in the life of our chapter quarterly bulletin, christened *The Wisconsin Chapter News*. We are making a gift of a copy of each printing to the National Association for their archives. In this periodical we have attempted to notify each other, and interested medical and lay people, of our social and professional behavior, also to pass on bits of encouragement and information for physiotherapy work. Each member has contributed to the publicity of her particular institution or organization by cooperating in teaching, taking pictures demonstrating physiotherapy work, preparing reports of her department, giving talks explaining her work and aiding in every possible manner to carry on this much needed work. Our members are distributed in a wide range of work, including orthopedic schools, state survey work, hospital clinics, physicians' offices, curative workshops, and visiting nurse associations, enabling our chapter to have a very broad minded viewpoint.

Although a comparatively young and small chapter, we are proud of the evident spirit of enthusiasm and cooperation of every member for bigger and better physiotherapy service.

Respectfully submitted,
LUCY E. BLAIR, Chairman.

DISTRICT OF COLUMBIA CHAPTER—The outstanding point of the publicity work of this chapter is, I think, the fact that we have been able through the excellent work of our president, Miss Vogel and her committees, to establish a more direct contact with the District of Columbia Medical Society. This is an outcome of the interest and advice given us by some of our speakers this winter, who were themselves members of the Society and felt that our organization was not sufficiently known by the majority of the members. We are very gratified to find that the publication of the Society, "Medical Annals of the District of Columbia" in its May number contains three short articles submitted by the members of our own organization. We hope to keep this contact alive and materially further it in the coming year.

We are continuing our registration, which was started last year, in the Official Directory of the Graduate Nurses Association.

We feel that we have gained some ground and hope to continue our efforts with renewed vigor in the coming year.

Respectfully submitted,
MIA H. DONNER, Chairman on Education.

MASSACHUSETTS CHAPTER—I regret that the Massachusetts Chapter will have to give a meager report on Publicity.

The cards announcing the appointment bureau, sent to the Chapter by Miss Eisenbrey, have been sent to doctors and hospitals..

Our meetings have been held all this year at one of our hotels. The manager has seen that a notice of meetings and speakers, and at the annual meeting, names of the newly elected officers, has been given to the newspaper reporters for the papers on the following day.

It seems to me, that if each chapter would get in touch with some reporter who would put in a little item of each meeting it would be well worth while and good advertising.

Respectfully submitted,
LUCY MARSHALL, Secretary.

PENNSYLVANIA CHAPTER—For publicity this past season, we have sent notices of our meetings to the papers, have passed on at every opportunity copies of the PHYSIOTHERAPY REVIEW with the aims and objects of the American Physiotherapy Association as well as the Pennsylvania Chapter. THE REVIEW has been on file in the library of the Philadelphia County Medical Society.

Respectfully submitted,
BLANCHE B. SINN, Chairman.

WASHINGTON CHAPTER—no report.

MICHIGAN CHAPTER—no report.

NEW JERSEY CHAPTER—As you know last year the New Jersey Chapter sent out many letters to doctors, hospitals, and medical societies telling all about ourselves, our work, and our registry. This year we had a card printed to follow up the letter. (Card giving address, telephone of member in charge of bureau of appointment.) About five hundred of these cards were sent to doctors, hospitals and medical societies all over the state of New Jersey.

We also renewed our subscription to THE REVIEW for Dr. Reik, president of the New Jersey Medical Society, and for the Medical Library.

Respectfully submitted,
RUTH L. HARDY, Chairman.

TEXAS CHAPTER—no report.

WESTERN NEW YORK CHAPTER—no report.

Respectfully submitted,
CHARLOTTE MORRISON, Chairman.

ELECTION OF OFFICERS

President—Miss Margaret Campbell, Chicago, Ill. Vice President, Miss Marien Sweezey, Gary, Ind. Vice President, Miss Martha Hindman, St. Paul, Minn. Treasurer, Miss Mabel E. Holton, Ann Arbor, Mich. Member-at-Large, Miss Catherine Worthingham, San Jose, Calif. Member-at-Large, Miss Florence Phenix, Madison, Wis.

MEETING PLACE OF THE 1933 CONVENTION

The Chicago Chapter extended an invitation to the Association to meet with them next year and to enjoy the Chicago Exposition.

A discussion of this brought forth the proposal, that, instead of the usual annual convention, three regional conventions be held at different times to give to those who are not able to attend the annual meeting, the opportunity for a similar meeting near by.

It was voted to leave this to the decision of the Executive Committee based upon this discussion, and upon a response from any members who wish to voice their opinion in regard to this proposal.

DISCUSSION OF NON-CITIZEN MEMBERSHIP

The unanimous opinion of the convention body was, that the question of citizenship does not affect the professional qualifications of those applying for membership. As the Association's aim is the maintenance of high standards of training and practice, it should give preference to a thorough investigation of foreign training schools to determine qualification for non-citizen membership rather than disqualify such applicants.

SCHOOL CURRICULUM

The Committee on Education recommends that a survey augmenting that made by Miss Marguerite Irvine in 1930, be conducted before a definite curriculum be adopted. This will determine a better understanding of the problems which confront the teaching field.

THURSDAY, JUNE 30, 1932

This session opened with an announcement from Miss Janet B. Merrill of the prize winners of the Posture Contest sponsored by the Children's Hospital of Boston, Mass.: First prize, $50.00—Miss Zola Veary, Toledo, Ohio; Honorable Mention and $10.00—Miss Ruth Hansen, Billings, Mont. These papers were upon the Methods of teaching Body Mechanics to School Children. The Judges wish to express their thanks to others submitting papers and their appreciation for the publicity given to the Contest by the American Physiotherapy Association.

AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

Unanimously adopted: Membership—That Article II of the By-Laws be amended to read as follows:

Section 2-a—Active members shall have had at least one year's practice in Physical Therapy within two years of graduation from:

1. An approved School of Physical Therapy by which is meant a school which gives not less than three years training in Physical Therapy, and which is in the approved list of the American Physiotherapy Association.

2. An approved course in Physical Therapy by which is meant, a course in Physical Therapy of not less than nine months, and which is on the approved list of the American Physiotherapy Association, following graduation from a school of Nursing or a school of Physical Education which meets the requirements set by law in the individual states.

Section 3-b—The Executive Committee shall in its discretion have power to admit as active members, candidates whose training and experience are deemed to be equivalent to the requirements in Article II—section 2, and shall have sole power to judge whether the training and experience of any candidate are equivalent thereto.

New section, Article II.

Section 3-d—The Executive Committee shall have sole power to determine what schools and courses in Physical Therapy are from time to time to be placed on the approved list of the American Physiotherapy Association, or to be removed from such list when it seems advisable.

Bureau of Appointments: Article VII, section 2-b—Amendments to the By-Laws, amended as follows: By changing the numbering of b-3 to b-5. By inserting a new b-3 to read as follows: Section 2, b-3. To collect an annual fee of $1.00 from each member who registers with the Bureau. The amendment in regard to the registration of specially trained, non-members was put to vote and lost.

Legislation: The motion was made and carried that the Legislative Committee of the American Physiotherapy Association, be empowered to cooperate in every way with the Council of Physical Therapy of the American Medical Association, in drafting a law which is desirable for registration. This motion followed the discussion of the recommendation of the Council of Physical Therapy of the American Medical Association that the American Physiotherapy Association outline its standards of training and practice of Physical Therapy which might be used in the drafting of model state law.

THE SALE OF EMBLEMS, PINS AND UNIFORMS

Upon notice from William Filene's Sons of Boston that they are discontinuing the handling of the association equipment, it was voted that the treasurer, Miss Holton, handle the sales of emblems and pins and that the so-called official uniform, which has not been very popular with the membership as a whole, be discontinued.

SUGGESTED REVISION OF THE CONSTITUTION AND BY-LAWS

A motion was made and carried, that the Executive Committee, appoint a special committee for the consideration of a revision of the Constitution and By-Laws to provide for reorganization of the controlling board, and for a paid executive secretary.

NEW BOOKS ON PHYSICAL THERAPY

Delegates have reported that books have been purchased by their respective chapters for general use, and are the beginning of a chapter library. Suggestions of new books for individuals or chapters were as follows: *Handbook on Physical Therapy*, $2.50; published by the American Medical Association. Three volumes, Loose-leaf, $15.00 per volume: 1. *Physical Therapy Technique;* 2. *Physical Therapy in Medicine;* 3. *Physical Therapy in Surgery;* Published by W. F. Prior Company, Inc.

The business session then closed with a vote of thanks to the Wisconsin Chapter for their cordial hospitality.

EDITH MONRO.

Abstracts

By John S. Coulter, M.D.

Hydrogymnastic Exercises for Acute Injury. A Personal Experience. C. L. Lowman, M.D., Los Angeles, Calif., in The Am. J. Surg., xvi:1:101, April, 1932.

Having written and theorized for a number of years about the use of underwater gymnastic exercises as applied to a variety of cases, I had occasion recently to give them a personal test in the hydrogymnasium of the Orthopaedic Hospital in Los Angeles.

On Dec. 22, 1930, in an automobile accident, I suffered the following injuries: fractures of the lateral processes of four lumber vertebrae, avulsion of muscles and ligaments from the posterior aspect of the left ilium, fracture of the tip of the coccyx, subluxation of the left knee with rupture of the posterior crucial ligament, acute traumatic synovitis of the right knee, a crushing blow diagonally across the right thigh, tearing the quadriceps and vastus laterals with the production of a very large and extensive hematoma, severe twist of the pelvis and hip joints and abrasions and contusions too numerous to mention.

After eight days in a plaster spica, I was transferred into a snugly fitted body brace and leg splints and from then on began physiotherapeutic treatments, chiefly cotton compress for the right thigh, baking and massage, alternating with pool treatments. To begin with, active voluntary movements of the legs could not be made without acute pain but in the water could be painlessly made as indicated, through quite a considerable arc.

12-30-30: Afternoon, cautious light back rub. 12-31-30: Pool. 1-1-31: No pool. Hot fomentations to right leg and thigh, followed by massage. 1-3-31: Pool. Compression massage during treatment. Upper lymph channels emptied first, then worked down to knee. Hip range nearly normal; ankle practically so. 1-4-31: No pool. Cautious massage. 1-5-31: First attempt to stand in deep water. 1-6-31: Pool. Walked across pool with crutches. Feeling of falling backward unless strong effort to lean forward. Very little pressure of arms would lift feet off bottom. 1-7-31: Pool. Shallow, hot pool. Compression massage to right thigh during flexion and extension aids greatly in releasing movement. 1-8-31: Walked across pool without crutches. 1-10-31: Prone lying on plinth to get flat back. 1-11-31: Leg massage. No pool. Pain lessening about hips and knees.

From this point on, progress was steadily increased until walking in shallow water about up to middle. About Jan. 20 the first attempt at standing in the room and taking a few steps showed a greater difference than one would expect between walking out of water and walking at shallow depth. In about another month to six weeks, I was able to begin movements of the back.

Most remarkable is the fact that for the first two weeks any effort at active motion of the legs in bed produced pain in the knees, thighs or back. It was impossible to raise them from bed without assistance. At the very first treatment in the pool, when it required great care in handling on table or guerney, and even then there was great discomfort. It was most gratifying and comforting to get into water and be able to move all joints to a considerable range before producing any pain.

Intensity of Ultraviolet Radiation From Different Parts of the Carbon Arc. Prof. E. A. Owen, M.A., D.Sc., and Philip Wright, Ph.D., University College of North Wales, Bangor, in British J. Radiol., v:52:324, April, 1932.

SUMMARY

The intensity of ultraviolet radiation emitted from different parts of the solid carbon arc has been measured by means of the aluminum photoelectric cell, which is sensitive to radiation extending from 3,130 A to 1,850 A, with a maximum sensitivity at the wave-length 2,-200 A.

Ultraviolet radiation in this region of wave-length has its origin mainly in the flame of the arc. This corroborates the results of Angus and of Griffith, Taylor and Jack, who employed different methods of measurement.

The most intense radiation is emitted from a point in the flame about 1 mm. from the tip of the positive electrode. The ultraviolet radiation from the incandescent carbon is in general small compared with that from the flame.

The results indicate that the aluminum photo-electric cell is a suitable instrument for the measurement of the bactericidal action of ultraviolet radiation.

The results obtained with the aluminum cell are verified qualitatively by the spectra of different parts of the arc taken with a quartz spectrograph.

Wave Lengths. An editorial in J. Michigan State M. S., xxxi:5:344, May, 1932.

In these days of radio, and for the doctor, radiotherapy, the following data in regard to wave lengths of the various rays will be of interest.

Light rays range from the Hertzian through to the cosmic rays. Of these the solar spectrum comprises a small fraction. The Hertzian or radio waves are the longest. The longest radio waves are several miles in length, while the shortest are only .03 of a centimeter long. Next come the heat or infrared rays, invisible to the eye but detectable by the thermometer or by the sensation of warmth. They are called infrared because they precede the red rays of visible light. Their wave length ranges from .03 of a centimeter to .000078 of a centimeter. The infrared rays begin with red light with a wave length of .00078 centimeter and end with violet light with a wave length of .000038 of a centimeter.

The ultraviolet rays, which range down to a wave length as low as .00000136 of a centimeter, the X-rays ranging down to a wave length of .0000000137 of a centimeter, and the gamma rays of radium, the shortest having a wave length of .0000000002 of a centimeter, follow in the order named. The cosmic rays, the seventh known type of electromagnetic radiation have the shortest wave length of all, some thousands of times shorter than the shortest gamma rays.

The Circulatory Changes During Hyperthermia Produced by Short Radio Waves (Radiothermy). Carl J. Wiggers and Oscar Orias (from the Department of Physiology, Western Reserve Medical School, Cleveland, Ohio), in Am. J. Physiol., C:3:614, May 1, 1932.

The use of artificial hyperthermia in the treatment of certain infections and their consequences has received a great impulse from the development of physical apparatus by which controllable hyperthermia can be produced. Two forms of apparatus are used, viz., that employing high frequency currents directly applied to

the body by means of electrodes and commonly referred to as diathermy, and that by which short radio waves are caused to traverse the body. In order to differentiate between hyperthermia produced by this means, we shall refer to the latter as radiothermy without any implication that it necessarily differs from hyperthermia. The recent introduction of satisfactory apparatus for producing high temperatures in patients by passing short radio waves through the body (Carpenter and Page, 1930) necessitates an inquiry as to whether the circulatory reactions produced are similar in kind and degree to those caused by application of external heat or whether the passage of electromagnetic waves per se produce still other changes which are beneficial or deleterious.

SUMMARY

The circulatory reactions during radiothermy (i.e., hyperthermia produced by passing short radio waves through the body) were investigated in anesthetized dogs by registering the partial pulses from an innominate artery by a mirror manometer.

Several types of experiments were carried out: (1) In some heating by radio waves was continued until death. (2) In others, radiothermy was interrupted for varying periods and at different temperature levels. (3) In still others, hyperthermia was maintained between 39.8 to 41 degrees for an hour or two, and the recovery studied.

Qualitative and quantitative studies of the circulatory reactions reveal certain differences in hyperthermias produced by high external temperatures and by radiothermy. In hyperpyrexia due to the former, blood pressures tend to decline with temperatures above 41 degrees C. The pressure pulses become smaller, rise more gradually to a peak and are devoid of all secondary vibrations. In short they display features which suggest that systolic discharge is reduced and the force of ventricular contraction decreased. During radiothermy, on the other hand, systolic and diastolic pressures increase tremendously after heart temperature exceeds 41 degrees C. The pressure pulse increases greatly in amplitude, rises sharply to a peak and contains many after-vibrations. All of these features suggest that the force and vigor of ventricular contraction are improved until the crisis is reached. Many features of the curves suggest, however, that the systolic discharge delivered by each beat may not be increased and perhaps is decreased. Vascular changes doubtless contribute to the blood pressure changes, but whether these are in the nature of an increase in peripheral resistance or a decrease in elasticity of vessel walls requires further study.

Despite the fact that changes in heart rate, pulse pressure and pulse form have been observed without changes of temperature within the heart cavities, this does not prove that the passage of radio waves exerts an effect independent of local temperature changes in the cardiac or vascular structures.

When radiothermy is continued long enough, death occurs as in other forms of hyperthermia, i. e., through primary failure of the respiratory center which is followed by circulatory failure due to asphyxia.

Animals kept between temperatures of 39.8 and 41 degrees for two hours manifest a circulatory reaction as the temperature declines and returns to normal. The blood pressures fall and pressure pulse clearly indicate that systolic discharge is decreased and ventricular expulsion is less forceful. These reactions combined with vascular relaxation may cause hypodynamic states which, though not to be classed as circulatory failure, are nevertheless severe reactions. Hence the suggestion is made that great care and caution are advisable in the after-care of patients exposed to prolonged radiothermy.

Reflection of Utraviolet Rays. Austin Furniss, L.R.C.P., L.R.C.S., L.D.S., D.P.H., in British J. Phys. Med., vii:2:29, May, 1932.

An ordinary mirror, which reflects excellently in the visible range, reflects only to about 4 per cent at 3,160 A.U., but this rises to 34.1 per cent at 2,150 A.U. Silicon absorbs least of all, and is, therefore, the most efficient reflector. It reflects 75 per cent of the rays, and an average of 60 per cent for the whole range from 3,800 A.U. to 1,800 A.U.

Gold and copper reach their minimum between 3,500 and 4,000 A.U. but reflect 35.8 per cent at 2,810 A.U. Nickel reflects 40-45 per cent, steel about 40 per cent, but silver reflects only 6 per cent of the most useful ultraviolet rays. Magnalium, an alloy composed of 69 parts of aluminum and 31 parts magnesium, reflects 80 per cent of visible light, dropping to 67 per cent at a wave-length of 2,500 A.U., and it is stated that this reflective power does not diminish with age.

Polished nickel and chromium are, however, generally considered to be the most practical reflecting mediums for ultraviolet rays. Chromium can now be obtained with a very high finish. The reflecting hoods used with different ultraviolet radiation lamps are of various sizes and shapes—hemispherical, cylindrical, parabolic, prismatic, rectangular, etc.,—and are generally made of aluminum, which is, however, not so good a reflector of ultraviolet rays below 3,200 A.U., as chromium, but this is not of very great consequence, since it is the direct rays that are most important.

When radiation falls on the body, some is reflected. This can readily be proved by projecting ultraviolet radiation on the skin after filtering it through an oxide of nickel filter and then holding a fluorescent screen in a position facing the skin and with its back to the filter. The screen will fluoresce brightly. The screen is usually composed of barium platino-cyanide, willemite or uranium glass (canary glass). The constituent which bestows this fluorescent property on canary glass is uranium oxide. As small a proportion as only one per cent of this oxide on a soda lime base gives a strong fluorescent glass which has the power of transforming invisible ultraviolet rays into longer rays of green light.

Owing to the fact that there is a considerable amount of reflection of both visible and ultraviolet rays from the surface of the skin, the patient should be placed, whenever possible, so that the rays from the lamp strike the part being radiated at right angles. The patient will then receive the maximum amount of the rays—the normal ray. The amount of reflection increases if the incident angle is less than a right angle. The law governing this loss of intensity is known as the "cosine law", and in accordance with it, the period of exposure must be proportioned in a definite relation to the size of the angle of incidence. A chart can be obtained showing the dosage required for irradiation at different angles of incidence.

An unequal effect is produced by radiation of large convex surfaces such as the shoulder, the action of the rays as stated, being strongest when they strike the surface at right angles. In practice, when giving general irradiation with the mercury vapor lamp, it would ensure even distribution of radiation if the patient during the earlier applications assumed a curved position approximating to part of the circumference of a circle with a radius of three feet. Should the distance, however, be lessened to one foot, the assumption of the

hypothetical curved position required would be quite impossible.

In some cases where local lesions are being treated, a concave mirror may be used to focus the rays on the part and this should have its reflecting surface coated with nickel or silicon. T. W. Miller has used a steel mirror with the Wessely water-cooled carbon arc lamp in the actinic treatment of tuberculous laryngitis. More often the rays of the tungsten arc lamp are focused by means of a quartz lens 2 inches in diameter, with a focal length of 4 inches. It must be pointed out that ultraviolet rays come to a focus at a point nearer to the arc than the focal point of visible rays. This can easily be proved by an experiment with an oxide of nickel filter and a piece of uranium glass.

Irradiated Milk: the New Rickets Prevention Therapy. Esther B. Hardisty, B.A., C.P.H., New York, in Arch. Ped., XLIX:4:236, April, 1932.

SUMMARY AND CONCLUSIONS

Since the disagreeable taste and odor of cod liver oil preclude its universal adoption, irradiated milk should eventually become the antirachitic agent of choice.

The fact that the consistent administration of cod liver oil or any other antirachitic agent depends upon the mother or nurse remembering to give it, oftentimes the infant is deprived of the help that would otherwise be given by these agents. On the other hand, when irradiated milk is given the antirachitic factor is included in the food of the infant, and mothers do not forget to give their babies their feeding.

Irradiated milk must be activated under controlled conditions. There must be uniformity of irradiation.

Milk is activated to a marked degree by exposure for but a few seconds of irradiation by the ultraviolet rays.

Correctly irradiated milk undergoes none of the adverse effects, such as change of taste or odor which are found in milk which has been exposed for longer periods of time. Irradiated milk retains its antirachitic potency over long periods of time.

Irradiated milk is now being commercially produced and is of a standard quality and uniformity.

The incidence of rickets will be, it would seem, appreciably decreased if all milk given to babies were irradiated.

Additional Factors in the Treatment of Late Rickets —Osteomalacia. Dagmar Curjel Wilson, M.D., Glasy, D.P.H., Women's Medical Service, India, (Ret'd) in The Lancet, ccxxii:5674:1142, May 28, 1932.

ANTIRACHITIC VALUE OF SUN IRRADIATED YEAST

The usefulness of the administration of dried baker's yeast (saccharomyces cerevisiae), after irradiation by ultraviolet rays in the treatment of various forms of rickets has been recorded by various observers in Europe and America. In order to overcome the cost of imported yeast, and the difficulty attendant on its ultraviolet irradiation in India, the present communication describes the results of treatment with dried yeast powder prepared in India from the various varieties of yeast left over in distillery vats after fermentation and irradiated for eight hours in direct sunlight.

The patients put on weight and their general nutrition was improved at the end of four weeks, but five additional cases who failed to take an adequate daily quantity of yeast did not show any alteration at the end of the experimental period.

The conclusion reached was that waste distillery yeast after sun irradiation has value as a source of vitamin D in the treatment of late rickets and osteomalacia. It is suggested that such yeast may also be useful in nutritional disorders due to deficiency of vitamin B.

Vitamins and Radiation. Annotation in The Lancet i:xxii:1160, May 28, 1932.

Vitamin research has for many years engaged the attention of physiologists and biochemists and has of late been a field of work chosen by pure organic chemists. The progress recently made toward the identification and preparation of these once mysterious substances has been astonishingly rapid, so much so that the stage has already been reached when profitable attempts may be made to determine their actual molecular structure. Physical chemists are now taking up this problem, and F. P. Bowden and C. P. Snow (Nature, May 14, page 720) of the Laboratory of Physical Chemistry, Cambridge, have lately reported a series of experiments which promise to shed light on the constitution and possible methods of production of the vitamins. They employ photochemical and spectroscopic methods to follow the changes which take place in the structure and properties of certain of the vitamins and pro-vitamins as the result of exposure to radiations of strictly defined wave-length, the essence of their technic being to employ monochromatic light as the source of radiation instead of using light filters. Their results already suggest that they have accomplished the actual conversion in vitro of the pro-vitamin carotene to vitamin A. On spectrographic analysis carotene shows characteristic absorption bands, one of these being situated at 2,700 A. A solution of carotene was exposed to radiation at about this same wave-length, namely 2,650 A, selected from the spectrum of mercury. After a few hours of such irradiation a new absorption band appeared in the spectrum of the solution, situated at 3,280 A, and an absorption band in this situation is fairly generally recognized as characteristic of vitamin A. The obvious presumption is that carotene has been converted to vitamin A by the irradiation and further work is now in progress to determine by other methods, including biological experiments, whether this conversion can in effect be proved.

The new work brings to mind at once the well known method of producing vitamin D by radiation of its parent substance, ergosterol. Just as it has long been known that exposure to radiations of short wave-length can destroy vitamin D as well as bring about its synthesis, so it now appears that vitamin A can be destroyed by exposing it to radiation of suitable wave-length. Similar results were obtained with vitamin B; it was apparently possible to destroy the activity of Janson and Donath's crystalline vitamin B by subjecting it to radiation of 2,537 A. It seems possible that the monochromatic light technic may lead to advances in knowledge of the constitution of the vitamins.

The Mobilization and Excretion of Calcium Following Over-Dosage with Irradiated Ergosterol. N. B. Taylor and C. B. Weld, Department of Physiology, Univ. of Toronto, in British J. Exp. Pathol., XIII:2:110, April, 1932.

It has been quite positively established by many workers that irradiated ergosterol, when given in large doses to animals, will cause a marked hypercalcaemia. The mechanism by which the hypercalcaemia is produced is not, however, completely understood. There is dispute, indeed, over the important question of the source of the excess serum calcium.

SUMMARY

Large doses of irradiated ergosterol when adminis-

tered to dogs in negative calcium balance cause hypercalcaemia. The total calcium excretion is also increased. The experiments indicate that the excess calcium in the serum is derived from body tissues.

Hypercalcaemia has been produced by the intravenous administration of irradiated ergosterol to cats from which the gastric intestinal tract has been removed.

Cats poisoned with lead and given large doses of ergosterol after the lead administration had been discontinued showed a striking increase in the quantity of the metal excreted in the urine. Large quantities of calcium were excreted with the lead.

In normal dogs calcium is excreted chiefly by the bowel; only small quantities appear in the urine. Under the influence of large doses of irradiated ergosterol the route for the excretion of calcium is turned from the intestine to the kidney. Evidence is submitted in support of the conclusion that the reduction in faecal calcium which follows ergosterol administration in this dosage is due to depression of the intestinal excretion rather than, as has been supposed, to increased absorption.

No correlation between the calcium content of the diet and the quantity of calcium in the feces could be found. Animals during starvation excreted as much calcium in the feces as those upon diets containing moderate quantities of calcium. The amount of calcium excreted by animals upon a normal diet was just as great as when, during later periods, they received excess calcium in the form of calcium chlorid.

CONCLUSIONS

The hypercalcaemia following large doses of irradiated ergosterol is due to the withdrawal of calcium from the skeleton. Ergosterol over-dosage depresses the power of the intestine to excrete calcium. The calcium mobilized from the bones accumulates in the serum. A certain level of serum calcium having been reached, an increase in the urine calcium follows. Ergosterol in the amounts which produce hypercalcaemia does not increase absorption of calcium from the intestine.

The Combined Trypaflavine Quartz Light Treatment of Psoriasis Vulgaris. A Report of 111 Cases Thus Treated. S. J. Zakon, M. D., Chicago, Illinois, Med. J., lxi:5:444, May, 1932.

Acridine dyes are derivatives of acridine, a base found in coal tar. One of these derivatives (diaminomethylacridine-chloride) was found by Ehrlich to possess notable therapeutic effects in trypanosoma infections and on this account he called it trypaflavine. The English investigators who conducted clinical and bacteriological studies of this substance called it acriflavine. Trypaflavine ("neutral" acriflavine), acriflavine base is actively antiseptic and has been extensively used to check infection of wounds and mucous membranes and as a urinary antiseptic.

Besides these antiseptic properties the acridine dyes are also strong light sensitizers. These dyes when used intravenously photosensitize the tissues to the ultraviolet rays.

In 1926 Jausion, Vaucet and Diot described the intravenous use of trypaflavine (they called it gonacrin) in the treatment of specific urethritis of the male. Jausion noticed that the patients thus treated developed on the exposed parts of the body, such as face, and hands, areas of erythema solare. The degree of the erythema varied with the duration of the exposure and with the intensity of the rays of the sun. This phenomenon Jausion called "Coup de Soleil Acridinique" and attributed it to the photosensitizing property of the acridine dyes.

One hundred and eleven cases of psoriasis vulgaris—acute, subacute, and chronic—were treated by the intravenous administration of aqueous trypaflavine solution and by general body radiation with the air-cooled quartz lamp. Of the 111 patients, 65 were males and 45 were females. The age of the youngest was 11 and that of the oldest 52.

Thirty-seven patients were healed of all lesions by the use of this therapy alone. Sixty patients were markedly improved, but at the end of the treatment some inveterate lesions remained that did not respond to this therapy.

The average duration of the treatment was 37.9 days. The average number of injections of trypaflavine was 10.8 and the maximum number was 26. The strength of the trypaflavine used at first was 1 per cent aqueous solution, but at present a 0.5 per cent aqueous solution is used and is equally efficacious.

TECHNIC

The technic is simple. On the first day the patient receives 5 c.c. of 0.5 per cent aqueous trypaflavine solution intravenously. Fifteen minutes later the patient is placed under an air-cooled quartz lamp, his entire body is exposed to the light for about 20 seconds, at a distance of 40 cm. (15½ inches). Body radiations are then given in gradually increasing doses, always below the erythema dose. The durations of the exposures will naturally vary according to the type and age of the burner, distance, type and texture of the patient's skin. On the third day the patient receives 10 c.c. of a 0.5% trypaflavine solution intravenously followed by ultraviolet radiations. The injections are given three times a week. In all, twenty or a maximum of twenty-six injections are given. The same care and asepsis should be used as in injecting neosalvarsan. If at any time durin the course of the treatment signs or symptoms of intolerance to the drug appear, the injections should be discontinued.

Besides the trypaflavine and daily ultraviolet radiations the patient takes a daily lukewarm bath to remove the scales and applies to the lesion 5 per cent boric acid ointment. The patients under this therapy turn dark brown—resemble Moors—but they prefer this method since it avoids the use of staining and irritating ointments. This therapy like all other treatments of psoriasis does not insure permanent relief. Recurrences are not prevented, but they may be retarded in patients who pigment well.

Ultraviolet Radiation Useful for Therapeutic Purposes. Specification of Minimum Intensity, or Radiant Flux. W. W. Coblentz, Ph.D., D.Sc. Washington, D. C., in Jour. A. M. A., 98:13:1082, March 26, 1932.

THE UNIT OF DOSAGE

The foregoing discussion leads to the question of what should be the value of the unit of dosage. As indicated elsewhere, the numerical value should be some convenient number, neither too large nor too small.

If a radiant flux of 10 microwatts (100 ergs) per square centimeter per second of homogeneous radiation of the wavelength 2,967 angstroms is adopted and called the Finsen unit (F. U.), then, according to the foregoing specifications, a therapeutic dose of the foregoing sources would be as follows: radiation of the standard wavelength 2,967 angstroms, 2 Finsen units; the sun, 9 Finsen units; the Mazda S-1 lamp, 8 Finsen units; the Mazda S-2 lamp, 9.3 Finsen units; the quartz mercury arc, from 6 to 7 Finsen units; "cold quartz," 4 Finsen units; and the carbon arc lamp, from 5 to 9 Finsen

units, depending on the kind of carbon and whether the arc is bare or is shining through a glass window.

The manner of applying this information is interesting. Suppose the sun is used as a source. Evidently the intensity cannot be increased by decreasing the distance. Hence it will be necessary to increase the time of exposure. For example, if the ultraviolet intensity (radiant flux) is only 4.5 Finsen units (45 microwatts per square centimeter) the exposure must be continued twice as long as when the intensity amounts to 9 Finsen units.

On the other hand, if an artificial source of high intensity is being used, for example, a high intensity quartz mercury arc lamp having an ultraviolet radiant flux of 120 microwatts per square centimeter (12 Finsen units) at the standard distance sufficiently to reduce the intensity to the standard value (6 Finsen units) or to reduce the time of exposure to one-half the standard value.

From the foregoing, it will be evident why most of the published data now available are inconsistent and misleading. These data do not include a factor that equates the physiologic (erythemal) response. As mentioned before, when this factor is taken into consideration there is good agreement between the observed and the computed time of exposure to produce a minimum perceptible erythema, using sources differing widely in spectral quality and in total intensity of ultra-violet radiation, useful for therapeutic purposes.

The Effects of Ultra-Violet, X—, and Cathode Rays on the Spores of Mucoraceae. By Basile J. Luyet, Sc.D., Rockefeller Institute for Medical Research, New York City, in Radiology XVIII:5:1019, May, 1932.

SUMMARY

Spores of the fungus Rhizopus nigricans have been irradiated with cathode, X—, and ultra-violet rays. Survival ratios with each type of radiation give curves which indicate that more than one hit or quantum absorption is necessary to kill. Measurements have also been made of the decrease in growth occasioned by sublethal doses of each radiation.

The production of giant cells which ultimately die without undergoing further development has been noted. They become most numerous under cathode rays and are least often seen after ultra-violet irradiation. No evidence has been found that small doses of any of these radiations are stimulative.

Protection from Dangers Arising from the Use of X-Rays, Ultra-Violet Rays and Radium. Editorial Comments.—In Canad. M. A. J., XXVI:3:339, March, 1932.

A Committee of the Health Organization of the League of Nations has recently published a very comprehensive report entitled "Protective Measures against Dangers arising from the Use of Radium, Roentgen and Ultra-violet Rays."

This report, from its complete survey of the subject, and its authoritative character, will be of great value to all those engaged in radiological work and have the duty of designing radiological departments and installing the necessary apparatus. It may be obtained in Canada from the League of Nations Society in Canada, 389 Wellington St., Ottawa, price 75 cts. A. G. N.

Sunstroke and Allied Conditions in the United States. Geo. Cheever Shattuck and Margaret M. Hilferty in Am. J. Trop. Med., xii:3:233, May, 1932. (From the Department of Tropical Medicine and the Department of Vital Statistics, Harvard School of Public Health.)

It is generally recognized today that the penetrating power of the chemical rays (i. e., ultraviolet light) of the solar spectrum is very slight, and that the heat rays (i. e., the red and yellow) penetrate much more deeply. Current opinion, for this and other reasons, tends more and more to emphasize the deleterious effects of heat and to minimize those of the chemical rays.

Heat cases are commonly divided by clinicians into two principal groups, namely "sun stroke" and "heat stroke" which is characterized by hyperpyrexia and a dry skin with associated cerebral phenomena and "heat exhaustion," showing more or less circulatory disturbance, a moist skin, and a slightly elevated, normal or subnormal temperature. Apparently either group of symptoms may follow exposure on the one hand to excessive heat in the sun, or on the other hand, to excessive heat in the shade. Moreover, authors classify their cases differently and it appears that a large number of cases might be variously classified. Thus far neither circumstances of exposure nor the nature of symptoms have provided a satisfactory basis of classification.

The nomenclature used in the federal mortality tables for the registration area of the United States has been changed from time to time, but in recent years all cases reported as belonging to the categories mentioned above have been included under the caption "excessive heat." It is appropriate, therefore, in this communication to speak of all the varieties as "heat cases."

The higher death rates attributed to excessive heat including sun stroke are very irregularly distributed in the United States.

As a rule, the death rates have been markedly higher in urban than in rural localities. This feature becomes very pronounced in years when the deaths from heat have been notably foreign.

The death rate from heat effects in states having a large colored population is 2.4 times as high for the colored as for the white. This is approximately true for both sexes.

A co-relation with occupation is suggested by these figures.

Meteorological data from Massachusetts for the years 1901, 1911, 1917 and 1925 indicate that it was unusually high temperature rather than unusual humidity or low wind velocity which caused the deaths from heat.

Although we have no means of evaluating the importance of suitable clothing, there are indications that it is a factor which should not be overlooked.

Photochemical Technique. II. Construction and Tests of a Quartz Monochromator. Lawrence J. Heidt and Farrington Daniels, J. Am. Chem. Soc., 54:6:2384, June, 1932.

Monochromatic radiation of measured intensity is necessary for the quantitive study of photochemical reactions. Separation of the different wave lengths by refraction in a monochromator offers the most effective method for obtaining this radiation but the energy flux available at any one wave length is extremely low on account of loss due to reflection, absorption, slit dimensions, etc. To minimize this handicap a more intense source of light was developed. Further efforts to increase the radiation intensity by using a monochromator of large dimensions and favorable optical conditions are described in the present communication.

SUMMARY

A monochromator for the investigation of photochemical reactions in the ultraviolet has been described. An automatic device, not using a reflecting mirror or a

compound prism arrangement, keeps the 60 degree prism at minimum deviation and in the center of the field. Another device keeps the telescope automatically in focus.

Radiation of over 100,000 ergs per second from the prominent lines of a capillary mercury vapor lamp are obtainable with this monochromator.

"Purity" of monochromatic light obtainable from the monochromator has been tested in several ways, and compared with that of filters. Approximately 98 per cent of the radiation at any wave length setting falls within a range of ten to twenty millimicrons.

In the presence of uranyl sulfate 0.59 molecule of oxalic acid is photochemically decomposed for each quantum absorbed at 313 millimicrons and at 27½ degrees. This result is in close agreement with that of Leighton and Forbes. Uranyl sulfate, nitrate and oxalate used as sensitizers give practically the same results.

Photochemical Technique. I. A Simple Capillary Mercury Vapor Lamp. Farrington Daniels and Lawrence J. Heidt, Jour. Am. Chem. Soc., 54:6:2381, June, 1932.

This lamp was designed to meet the demand for an intense source of ultraviolet light for photochemical investigations and particularly for illuminating the slit of a monochromator. Mercury lamps and other sources of ultraviolet light have been reviewed. Forbes and his co-workers have developed an effective capillary mercury vapor lamp and have studied carefully its characteristics. The lamp described here is less permanent and it must be water-cooled, but it is simpler and cheaper. One can afford to run it at a great over-load, thus giving higher intensity.

The Effect of Infrared Radiation on Bacterium Lepisepticum Abscesser in the Rabbit. Janet H. Clark and Jeannette Chapman (from the Departments of Physiological Hygiene and Immunology, School of Hygiene and Public Health, The Johns Hopkins University); in The Amer. J. Hyg., XV:3:755, May, 1932.

Chapman and Hardy found that local radiation with a source of ultraviolet did not increase the resistance of rabbits to subcutaneous infections with B. lepisepticum, in spite of the fact that it has been shown to increase the resistance of the skin to inoculation with vaccine virus. They thought it possible that the negative result was due to the fact that ultraviolet radiation penetrates too short a distance into the skin to produce any effect on an organism introduced subcutaneously.

It has been shown by Cartwright and Danforth that only wave-lengths between 0.6 and 1.4 microns are capable of penetrating living tissue to any appreciable depth and that there is maximum transmission at 1:15 microns (21 per cent transmission through 5 mm. of tissue). Radiant energy in this penetrating region has been shown by E. Luce Clausen to promote growth in rats under certain conditions.

In view of the fact that various infrared radiation appliances are sold for the purpose of treating infections, and since a band of wave-lengths just above the visible is known to be relatively penetrating and to produce an increase in rate of growth under certain circumstances it was decided to investigate the effect of near infrard radiation on subcutaneous abscesses produced by inoculation with B. lepisepticum as in the previous experiments by Chapman and Hardy.

DISCUSSION

Hill and Eidinow reported that some protection against a lethal dose of staphylococcus was afforded rabbits by exposure to short infrared and red rays from gas fires using "Beam" radiant fuel. In our experiments, using a band of rays cut down by filters to the near infrared, with measured energy, and with a more chronic localized infection by an organism native to the host, no real evidence of benefit could be obtained. Neither was there evidence of a stimulating effect on the infecting organism, as Bessemans and de Potter thought was the case when they treated primary syphilitic lesions of the rabbit with infrared rays. Local subcutaneous temperatures were not taken in our experiments. The body temperature of our animals was not increased by the radiations.

In our experiments, we used two commonly recommended sources of radiation, with time of exposure ranging from one to sixty minutes, and a fairly wide range of energy, including the amount found by Clausen to promote growth in rats in a rickets producing diet. To be sure, the number of animals used for each dose was small, but whenever any indication of a favorable effect was obtained, that particular dose was repeated. This method seemed preferable in initial experiments, and the results obtained as a whole did not seem to warrant a very extensive study.

The normal variation in size of abscesses was greater than was ideal, being due possibly to the fact that the thickness of the skin of some rabbits made it difficult to be sure that the inoculations, even though subcutaneous in each case, were always at exactly the same depth. The location of the inoculum in relation to small blood vessels and variation in individual resistance of different animals might also be determining factors. Slight variations in the amount of culture injected seemed, on controls, to make little difference in the result.

Surgical intervention, with complete evacuation of the abscess, where that was possible, seemed a much more efficient method of treatment than radiation. In some animals whose resistance was low, deep secondary abscesses occurred, and for this no treatment availed.

SUMMARY

Infrared radiations (0.7 to 3.0 microns) from two sources, the penetrex lamp of Danforth and the Ever Ready carbon arc, given daily for two to three weeks, with total energy at each exposure varying from 0.000423 to 0.1350 gram calories per square millimeter, had no demonstrable therapeutic effect on subcutaneous abscesses in the rabbit due to B. Lepisepticum.

Physiological Effects of High Frequency Current. II. Further studies on respiratory metabolism of anesthetized dogs. E. S. Nasset (From the Department of Vital Economics, University of Rochester, Rochester, New York); in Am. J. Physiol., 101:1:194, June 1, 1932.

In an earlier paper (Nasset, Bishop & Warren, 1931) we reported the changes in respiratory metabolism of eight anesthetized dogs treated with high frequency electric current. The experiments reported here include some data obtained using 10 times the frequency employed in the earlier work, as well as some determinations made by another method but using the lower frequency.

It was pointed out in the first paper of this series that in certain instances it seemed that the rate of oxygen consumption was dependent upon the passage of the current more than upon body temperature and the rate of respiration. The demonstration of such a "specific effect" of high frequency would be of very

much interest. Plaut & Wilbrand (1922) noticed an excessive oxygen consumption as a result of exposure to a bank of high power electric lights. Bazett suggested (1927) that the alkalinity of the blood caused from the over-ventilation and consequent loss of carbon dioxide might influence oxygen up-take in some way yet unknown. In acute experiments, such as reported here, it must be borne in mind that the energy required for the respiratory muscles is very great. In experiments on three human subjects, Liljestrand (1928) found that under basal conditions the energy required for respiratory movements was one to three per cent of the total metabolism. He demonstrated very great increases in oxygen consumption when the work of respiratory muscles was increased either by re-breathing carbon dioxide or by voluntary forced breathing. In the latter instance he was able to increase the total metabolism 4.4 per cent for every "extra" liter of pulmonary ventilation per minute. If these data can be applied in the interpretation of our results on anesthetized dogs, it is quite likely that all of the oxygen consumed can be accounted for on the basis of the heat effect and the muscular work entailed in the excessive pulmonary ventilation.

SUMMARY AND CONCLUSIONS

The respiratory metabolism of anethetized dogs treated with high frequency electric current was further studied with the Benedict universal apparatus and by the collection and analysis of expired air. The maximum observed increase in heat production above basal was 313 per cent. A current of 60 cycles per second apparently elicited the same response as a current of 70 cycles per second. The pulmonary ventilation was increased up to fifteen-fold with a simultaneous reduction of carbon dioxide content or expired air to 0.5 per cent. Evidence is presented which suggests that there is no "specific effect" of the high frequency current on the oxygen consumption of the experimental animals.

The Biological Action of Ultrahigh Frequency Currents. Further Studies. Robert Alan Hicks and Waclaw Turner Szymanowski, Pittsburgh, in Jour. Infect. Dis., 50:5-6:466, May-June, 1932.

We have reported evidence to show that ultrahigh frequency radiation under certain conditions is capable of diminishing the potency of the three major bacterial toxins, botulinus, tetanus and diphtheria. At that time the question was raised whether or not the effects of such radiation may be entirely divorced from those attributable to the heat induced. In the case of the action on the bacterial toxins the heat factor was eliminated. In other reports, in the literature, however, it was not entirely clear that the biological effects observed were distinct from those incidental to the heat.

We now report the results of experimental work on the action of high frequency currents on biological substances other than bacterial toxins. The results tend to establish that ultrahigh frequency radiation, at least under many conditions, is biologically active only through the heat induced.

COMMENT

The literature of the last five years contains many reports on the action of ultrahigh frequency currents. In many instances, the plan and presentation of this material tend to leave in the mind of the student the impression that the results of the use of the ultrahigh frequency are in some way particularly striking or worthy of special note.

While theoretical considerations may indicate that in the future it may be found significant to heat a patient with a short wave current rather than with a long wave one, and that the hot wet dressing and the hot water bottle should be supplanted by the high frequency field, there is no evidence so far to show that there is any factor of significance in exposure to high frequency fields except that of heat. In other words, ultrahigh frequency radiation in regard to therapeutic action has not so far shown itself to be essentially different from diathermy.

It is noteworthy that the special conference on hyperthermia, held at Strong Memorial Hospital, the University of Rochester, Rochester, New York, on May 11, 1931, did not bring out anything that would indicate that there is any action of the electric field other than that which may be accounted for secondarily by the heat induced.

The consistently negative results reported in this paper lend further evidence to the belief that the only direct therapeutic action of ultrahigh frequency radiation is related to the problems of conductivity in tissues and consists in an elevation of temperature. All other effects in metabolism and therapy may be due secondarily to the heat induced.

For the moment, no studies in this field can be regarded as final, especially with respect to an interpretation of the results. If one considers the gamut of wave-lengths, each one of which may offer a distinctive action, if one considers the enormously variable factors in thermal conditions, character of medium, period of exposure, potential across the plates and different conditions of tuning, the problem, from the point of view of its physical set-up, becomes very extensive. If in addition, one considers the number of bacteria and bacterial variants, as well as other biological substances that might be studied under the whole school of physical conditions possible, it becomes obvious that no final statement may be made with regard to the biological action of ultrahigh frequency currents. It is possible, however, to say from the work now reported that at least there is no biological action on the substances mentioned under the described conditions of exposure to ultrahigh frequency fields. It is also probable that indefinite extension of this study may not lead to a vigorous and readily detectable direct biological action without some marked technical advance beyond that of the present day. It must be borne in mind, however, that almost infinite possibilities exist for the development of this field, and accordingly negative conclusions at this time are restricted to the experimental conditions employed.

Tuberculosis of the Middle Ear. T. G. Wilson in Irish J. Med. Sc., No. 75, p. 126, March, 1932.

TREATMENT

Local treatment should be confined to the simplest cleansing of the meatus. Anything more active is unnecessary unless secondary infection occurs, and then may be contraindicated by the patient's general condition. Dundas Grant considers iodoform in drops almost a specific. St. Clair Thompson uses H_2O_2 drops. J. A. Gibbs strongly advocates tuberculin. Zinc ionization is not mentioned in the literature, and Friel considers it unsuitable, but in my patient the disease certainly became quiescent after it.

The case about to be described was particularly interesting because of the opportunity presented of watching the onset of the disease in one ear, and its progress in both ears.

A Useful Self-Retaining Electrode for Zinc Ioniza-

tion in Chronic Suppurative Otitis Media. Max Kimberg, Brooklyn, N. Y., in Arch. Otolaryng., 15:5:750, May, 1932.

The process of ionization with zinc requires the use of zinc wire as a positive electrode, a solution of zinc sulphate and the galvanic current.

The electrode that I have devised for this purpose I have found to be especially suitable because of the simplicity of its construction and handling.

METHOD OF IONIZATION

First, the auditory canal must be carefully cleansed of pus by syringing with warm water. It is then wiped dry with cotton.

A solution of warmed zinc sulphate, one gr. (64.8 mg.), to an ounce of water, is then syringed into the ear. At this point, satisfactory results requires the removal of any air present in the middle ear by aspiration with an ear syringe. In an occasional case, the perforation in the drumhead may be too small to permit facile drainage of the zinc sulphate solution into the tympanic cavity. In this event, the solution should be injected by means of a small syringe through the hole in the drum.

The glass tube of the positive electrode is then fitted securely into the external meatus and the zinc rod inserted. The current is gradually turned on until a maximum of 3 m.a., is reached. This should take approximately three or four minutes. I usually continue the treatment from ten to fifteen minutes, and then diminish the current gradually. The auditory canal should not be dried after the treatment.

A reaction that sometimes draws the attention of one unaccustomed to using the method is a marked increase in the discharge after several treatments. However, this is but a temporary effect and should occasion no alarm. Other temporary side effects of the treatment that I have infrequently encountered are a slight increase in aural pain, ringing in the ears, some vertigo and an occasional aural eczema, which, however, responds quickly to the usual local treatment.

CONCLUSIONS

Using electrolysis with zinc sulphate twice a week for a period varying from two to twelve or more weeks, I have had very good results in a considerable number of cases over a long period of time.

I consider the simple electrode that I utilize for this purpose as an unusually practical one for the following reasons: It is simple in construction and use; it can be used with ease in young children; the two parts of the electrode may be sterilized by boiling; once treatment is commenced, the patient is comparatively free to move his head; the electrode fits snugly into the ear and cannot be dislodged easily; the electrode insures the submergence of a considerable length of the zinc wire in the solution, hence, there is no possibility of interruption of the current with its attending discomfort.

An Apparatus for Application of Heat in the Treatment of Gonorrhoea in the Female. H. M. Kanner, M.D., Sacramento, in Calif. & West. Med., xxxvi:5:344, May, 1932.

The accompanying illustrations show a very simple and inexpensive method of applying prolonged heat, with the added advantage of drainage. There are two pieces of apparatus—one for the office and one for home use.

In the office treatment the patient is placed on the table in the lithotomy position and on a level with the lavatory. The irrigator is inserted into the vagina and is held firmly against the vulva by the patient, so that there is very little spill. The cold water is then turned on gently until a very small stream comes from the outlet. The hot water is turned on slowly, gradually increasing the temperature until it is as hot as the patient can stand. The rise in temperature is noted on the thermometer in the flask and is the guide for adjusting the flow so that the temperature can be kept at a fixed point. The patient soon learns to tolerate a temperature of from 118 to 120 F. over a period of twenty-five to thirty minutes. By this method heat is applied direct to the cervix and vagina with constant irrigation.

This type of treatment supercedes the use of tampons which are obnoxious and interfere with drainage, and the old Sitz baths which are weakening and depressing. In comparison, the patients favor the prolonged irrigations with heat.

COMMENT

The ideal treatment of gonorrhoea today is based upon: The application of heat with drainage; Elimination of foci of infection in the cervix and in Skene's and Bartholin's glands by either cauterization with actual cautery or endothermy or removal by surgery; Prevention of infection.

Medical Diathermy. John S. Coulter, M.D., Chicago, in Jour. A. M. A., 98:23:1987, June 4, 1932.

Diathermy does appear to have some value in the treatment of pneumonia. There is one fairly constant response to diathermy and that is the relief of pain. The degree and duration of this relief vary in different patients.

Diathermy cannot be considered a specific cure for pneumonia. It has proved a helpful therapeutic adjunct. It has not been proved that the duration of the disease has been affected by the use of diathermy, but symptomatically the results have been good. Its exact action is still unknown and further investigation is urgently needed.

Diathermy has been advocated by some as having value in improving the circulation in peripheral vascular occlusions. It may be used locally or to induce an artificial increase of temperature. It should be used as an adjunct to other forms of treatment and usually combined with circulatory exercises, continuous heat with an electric baker and hot and cold alternate baths. Early cases of circulatory impairment may be definitely benefited and the progress of the disease may be arrested.

In diabetic gangrene, the essential feature is an insufficient arterial supply, and therefore the application of diathermy in the treatment of this condition is logical.

When a diathermy current of from 1,000 to 1,500 milliamperes was applied to the lumbosacral region for thirty minutes with one large electrode in front and another in the back, individuals with normal peripheral circulation showed a marked rise in surface temperature. Patients with organic vascular obstruction show no alternation of temperature or just a perceptible rise. Patients with obstruction and some spasm show some change, but the temperature does not rise to the normal level of vasodilatation.

Hyperthermia by means of diathermy can be used for the treatment of these conditions. The effect of local heat in arterial spastic disease is not as lasting in relieving the pain and spasm as the application of heat to raise body temperature. Scott and Morton produced this hyperthermia by two methods: diathermy and hot baths. In all cases both procedures caused a relaxation from arterial spasm which outlasted the hyperthermia produced, and pain was temporarily alleviated.

Kelly says that medical diathermy is used in salping-

itis as an adjunct to the usual methods of treatment. The customary medical procedures are carried out with the addition of the use of diathermy with the electrodes, 6 by 6 inches, one on the suprapublic area and one over the sacrum. The first treatment is given for forty minutes with a maximum of 750 milliamperes. Any increase in pelvic pain or immediate elevation of more than 1 degree in temperature contraindicates diathermy for a time.

McKenzie has used diathermy in deafness with fairly satisfactory results. By this method two electrodes, 1 by 1½ inches (2.5 by 3.7 cm.), thickly padded with lint soaked in 10 per cent salt solution are used. One is placed over the mastoid and the other over the cheek on the other side. Sessions of thirty minutes are given, and these are repeated every day or every second day at least six times. If there is no improvement they are discontinued; if there is improvement, they are stopped for some weeks and then repeated. There is often an increase in the tinnitus at first, but this ceases later. McKenzie treated forty-six patients, most of whom had chronic dry catarrh. In five patients the deafness and tinnitus disappeared entirely after from two to six treatments. There was great improvement in five cases. The greatest improvement was obtained in cases of short duration. Of the remaining thirty-six cases, thirteen showed temporary improvement, twenty-one no improvement, and in two the tinnitus was made worse. Altogether, the condition was improved in 20 per cent of the cases.

Medical diathermy is now being extensively used to produce general hyperpyrexia. Neymann and Osborne report a series of twenty-five patients with dementia paralytica treated by this method with clinical remissions in 66 per cent, marked improvement in 8 per cent, and no serious harm resulting to any patient from this treatment. In a comparative study of therapeutic results obtained in a series of clinically similar cases of dementia paralytica treated by this method compared with treatment by malaria and sodoku, the remission and improvement rate of the diathermy cases exceeded that of the other two. Diathermy has also been used in the treatment of arthritis and allergic disease. These studies need extension and confirmation.

Diathermy Treatment of Ulcer of Leg. Abst. in Jour. A. M. A., 98:23:2030, June 4, 1932, from Wiener klinische Wochenschrift, Vienna, 45:300 (March 4) 1932.

Because ulcers of the leg, especially varicose ulcers, still represent a therapeutic problem, Szandicz decided to try diathermy treatment. After mentioning various reports that had appeared in the literature about this method, he relates his own experiences. In eleven of sixteen varicose ulcers that had existed many months or even several years, and which had proved refractory to nearly all therapeutic measures, systematic diathermy treatments produced objective results (narrowing of the ulcer or even complete epithelization). However, in three of these cases the healing was only temporary. After medical supervision had ceased for a while, and several weeks after the patients resumed their work, the ulcers opened again. This shows that neither is the therapeutic effect of diathermy always permanent nor does it prevent the formation of new ulcers. In five of sixteen cases, diathermy treatment accomplished nothing: three of these were torpid ulcers with callous margins, one was a crateriform thrombophlebitic ulcer, and one was a varicose ulcer that under the influence of diathermy treatment became erethistic. The diathermy therapy effected improvement in one case of roentgen ulcer and in one case of perforating ulcer of the foot. One ulcer in idiopathic atrophy of the skin was not influenced. In twelve cases of ulcer of the leg the pain was lessened considerably, two remained uninfluenced, and in three cases an estimation was impossible. Five cases of moist dermatitis of the leg, some of which showed infiltrates, were improved in a comparatively short time and some healed completely. One case of artificial thrombophlebitis, in the region of a spontaneous thrombophlebitis that had taken its course, was favorably influenced by diathermy treatment. The author realizes that his material is rather small, but in view of the therapeutic experiences in diffuse inflammations of the skin, he considers his report justified and the treatment deserving of further trials. In evaluating the diathermy treatment for cases of varicose ulcers of the leg the author does not advocate it as the standard method of treatment, for its objective results are not essentially better than can be produced by the usual methods. However, occasionally it may be employed as an adjutant to other therapeutic measures; for instance, when there is hope that by loosening the marginal portions a stationary process may be made active again, but especially when painfulness disturbs the sleep and impairs the working capacity. Painfulness is counteracted in a large percentage of cases.

The Uses and Abuses of the Colon. An editorial in The Lancet, 1:xvi:846, April 16, 1932.

Attention has also been drawn to the dangers both of unskilful administration and indiscriminate use of enemata and colonic lavage. Dr. H. H. Rayner has lately described the severe trauma and extensive sloughing that may result from the use of an unguarded bone or glass nozzle of an enema syringe—penetration of the anal mucosa being followed by fluid forced under pressure into the submucosa, while reference has been made in our columns to the warning of J. Friedenwald and M. Feldman as to the inflammatory changes which may follow the repeated use of irritating chemicals, including sodium bicarbonate and even soap suds enemata. A detailed summary of the technic, therapeutic applications, and dangers of colonic irrigations written by Dr. W. H. Bastedo for the American Council of Physical Therapy appears therefore at an opportune moment. While he distinguishes irrigations from enemata as having primarily the function of lavage whereas the latter are intended to produce defaecation many of his observations are equally applicable to both. He considers the insertion of stiff tubing for more than five or six inches into the rectum not only useless, owing to the fact that greater lengths tend to curl up in the rectal ampulla, but dangerous.

In colonic irrigation he recommends the use of an inlet and outlet tube, and plain water at or just above body temperature; the irrigation should be given slowly, after the bowel has been emptied to prevent the initiation of defaecation reflex, the mid level of the reservoir from which the irrigation is given being not more than two feet above the rectum. While the giving of an irrigation which usually "consumes from six to ten gallons and takes nearly an hour" may seem to some a counsel of perfection for routine procedure in the hustle of modern hospital life, there will be little doubt that a more satisfactory lavage of bowel and removal of tenacious mucous will be obtained by this method than the more hurried injection under greater pressure so frequently employed.

Bastedo has a word of warning with regard to the over-zealous self-irrigator found so frequently among

patients suffering from mucous colitis and deprecates the exploitation of the procedure by nurses and others. Amongst the commoner mishaps he mentions bleeding from the rectum, the tearing of a rectal valve, and the injury or severance of a polypus. Properly employed, however, he considers that irrigation tends to improve rather than lessen the tone of the bowel while it serves as a valuable therapeutic measure in washing out putrefaction material and loosening mucus above the defaecation area.

The Enema: Its Use and Abuse. Reuben Finkelstein, M.D., Brooklyn, N. Y., in New York State J. M., 32:10:577, May 15, 1932.

The enema is now chiefly administered for:

1. The relief of constipation and intestinal distention;
2. The local application of medicaments to the rectum and colon;
3. The administration of absorbable medicaments;
4. The purpose of supplying nutrition and fluids when mouth feeding becomes impossible or insufficient;
5. The diagnosis with barium sulphate of obstruction and various diseases of the colon;
6. Miscellaneous conditions.

Intestinal Relief: Constipation is the most frequent cause for the use of the enema.

The enema is of undoubted value in treating spasm of the distal portion of the colon, in sigmoid retention, and rectal dyschezia. In these conditions the enema breaks up and washes out the fecal masses. At the same time, the hot water will relieve the spasms of the bowel.

The usual case of constipation is due to the accumulation of solid material within the sigmoid and rectum; relief may therefore be obtained by an enema of normal saline or a five per cent solution of sodium bicarbonate.

The technique of administering the enema is as important as the contents. The lateral position is best; this avoids undue straining by the patient. At the same time the other organs fall away from the colon and thus lessen the pressure upon it. A short tip, or better, a catheter, should be inserted about two or three inches beyond the anus. In order to prevent undue distention of the rectal ampulla and to permit the filling of the entire colon without cramps or spasms, the enema bag should be held no more than three feet above the patient.

The habit of using so-called colonic irrigations for the relief of constipation is of no more value than the usual enema, and under certain circumstances may even be injurious to the bowel.

Local Medication: Solutions of mild astringents, such as tannic acid, gallic acid, alkalies or weak solutions of silver nitrate; or massive doses of properly suspended acidophilus bacillus mixtures may be introduced by means of the enema. In cases of multiple polyposis, a six per cent solution of tannic acid will produce a tanning effect on the pedicles which will then atrophy and the polyps will be expelled. All forms of colitis, dysentery, proctitis and parasitic diseases of the colon are benefited by the application of a proper enema.

Absorbable Medicaments: Such diseases as acute articular rheumatism, chorea, rheumatic cardiac diseases and sciatica are often benefited by rectal injections of solutions of sodium salicylate in large doses.

Nutrient Enemas: To supply nutrition and fluids to the patient in various diseases and after operations, is one of the most important uses of the enema. Only water, alcohol and chystalline material in solution as dextrose, salts, sodium salicylate or sodium bicarbonate are absorbed by the rectum or colonic mucous membrane.

A five or ten per cent solution of dextrose is the ideal nutrient enema. Such an enema should be given either as a Murphy drip or continuous Harris drip. It may be combined with a physiologic solution of sodium chloride or a five per cent solution of sodium bicarbonate. Concentration of more than ten per cent is not advisable because it may irritate the mucosa with resulting proctitis.

Before the administration of rectal feeding in any form, the rectum should be flushed out with an enema of a physiologic solution of sodium chloride.

Diagnostic Enemas: With the advent of the X-ray for diagnostic purposes another very important use was found for the enema.

Are We Up to Date in Our Treatment of Burns? H. J. Clements, M.D., Salem, Oregon, in Northwest Med., XXXI:5:209, May, 1932.

WHAT NOT TO USE

Before entering into the discussion of present-day usage, let us first consider present-day teachings as what not to use. Baths, a continuous immersion treatment, popularized by Hebra in 1861 and highly recommended by a number of surgical texts, has no proponents in the medical literature of the past ten years or more. The following objections are found in current literature.

Pack and Davis list the following objections: "Suitable tank, provided with proper regulated continuous flow of water of constant temperature, is hard to secure; constant nursing surveillance is imperative and costly. The feasibility of disturbing a very ill patient by lifting him out of bed and putting him in a tub of water is sometimes questionable." To this statement I would add the impossibility of preventing contamination from the skin and mucous membrances.

Christopher, Assistant Professor of Surgery, Northwestern University, says that enthusiasm compels him to regard Davidson's discovery of this method of treating burns as one of the outstanding therapeutic contributions of the century.

Beckman, reporting from the Services of the Children's Surgical Service, Bellevue Hospital, and giving a comparison of end-results by this and other methods, makes the following summary:

"1. The tannic acid method of treating cutaneous burns is the most satisfactory treatment so far advocated.

"2. The mortality has been decreased from 28 to 15 per cent in a series of 434 cases of burns in children.

"3. This decrease of mortality is the result of lowering the death rate from toxemia by two-thirds.

"4. Toxic absorption in burns takes place within twenty-four hours of the occurrence of the burn. The greatest mortality from toxemia occurs in the period of time between the end of the first twenty-four hours and the end of the third day.

"5. The average hospital stay of patients was increased six days by the tannic acid treatment. This is probably the result of the fact that patients with severe cases of burns lived who otherwise would have died."

Colles Fracture. D. Joseph Duggan, M.D., in New England J. M., 206:14:721, April 7, 1932.

The need for X-ray pictures following reductions exists to check on reduction and to give us medico-legal support. An excellent functional and anatomical result is to be expected following linear restoration to the normal of the fractured wrist provided, of course,

that the patient receives proper after-care. Satisfactory reduction is a sine qua non in Colles fracture cases regardless of age or sex. It must be accomplished before splints are applied. Gas anesthesia is ideal for most cases. Pads, position or splints should not be relied on to remedy a poor reduction.

Splinting should protect the reduced fragments not alone against anterior or posterior displacement, but also against lateral spread. The retention apparatus must give the fingers full liberty for free motion which should be encouraged from the beginning. Since recurrence of the deformity is so unlikely after satisfactory reduction, most of the after-care should be directed to the repair of existing soft part damage, and prevention of more by improper splinting. Patients should be seen within twelve to twenty-four hours following reduction and splinting to check soft part disturbances. Thereafter it is ideal to see the patient daily for guided physiotherapy—gentle massage at first and, after a few days, gentle active motion in the wrist joint. Subsiding of the tenderness in the callous is an index of solidity of bony union which determines, to a certain extent, the time and vigor of physiotherapy. Heat is a valuable adjunct. The patient is usually grateful for a hot soak with a small handful of epsom salts in the water. Diathermy and other refinements in physiotherapy are of doubtful value unless given under the doctor's supervision.

On the uninjured hand the width of the palm is measured and a steel rod one quarter inch in diameter or a little less is bent to a little more than right angles at the points marking the width of the palm. The disance from the mid palmar line to the radial and ulnar styloid process is next measured and the rod is bent again to an angle at these points to give a cock-up. The distance from the styloids to just below the elbow joint is measured and the rod is bent again at right angles. The ends of the rod are cut to leave two pieces to cross the dorsal aspect of the upper forearm. This gives us a wire cock-up splint which we might represent diagrammatically.

The cock-up splint is used after the reduction of reverse Colles fractures. The cock-up splint up side down is used when the hand must be placed in palmar flexion. For the common Colles fractures the splint is used straight; that is, without a cock-up. When ulnar flexion is desired the wire is simply bent to allow the desired amount. The wire is next threaded over with rubber tubing to make it more comfortable for the patient. The cut ends are then fastened together with a small strip of adhesive plaster. When the fracture is reduced satisfactorily, the patient's forearm to the carpus is enveloped in a generous sheathing of sheet wadding. The splint is applied so that the hand grips the lower cross-piece with the thumb anterior and the rest of the hand posterior. The upper cross-piece fits across the dorsal aspect of the upper forearm.

Although the splint is now held by pressure and counterpressure, a buckle and strap is applied at the wrist joint and also at the approximate end of the splint around the upper forearm to give additional support. Refinements such as gauze bandaging and a sling may then be applied. This type of splinting is suitable for routine use also with most epiphyseal injuries at the distal end of the radius and with most carpal bone injuries.

Osteoarthritis. Matthew B. Ray, D.S.O., M.D. Ed. Senior Physician to the British Red Cross Clinic for Rheumatism; in British Med. J., No. 3721, p. 789, April 30, 1932.

TREATMENT

Although in many respects osteoarthritis may be looked upon as a local rather than a general disease, the fact remains that its manifestations are associated with degenerative conditions. Treatment must, therefore, be directed towards sparing the patient any unnecessary metabolic burdens. A good working rule to effect this is to estimate the calorific value of the ordinary diet the patient is in the habit of taking, and to reduce it by one-third. This is especially applicable in the case of well-nourished plethoric individuals, which so many of the subjects are. There is usually an increased blood pressure, and the blood uric acid is apt to be high. For this reason the diet should follow very much the lines adopted for acute patients. Besides avoiding foods rich in purins, an adequate supply of vitamins should be insured. This is of prime importance, because osteoarthritis is undoubtedly associated with the absorption of toxins from a sluggishly acting bowel. Good results frequently follow measures directed towards changing the character of the intestinal flora, either by the use of Bulgarian soured milk or by such a preparation as lacto-dextrin (supplied by the Battle Creek Co.).

PHYSICAL METHODS

In addition to the general measures briefly outlined above, there are certain physical methods of treatment which are of the greatest value in restoring movement to stiffened joints and muscles and in the relief of pain.

For the first of these the deep pool bath is extensively used. It is of a sufficient depth to allow a patient to stand upright and to walk a step or two, and wide enough to permit exercises. Its temperature is kept at about 100 F. Combined with the pool is an underwater douche at a temperature of about 10 degrees above that of the bath. This has a powerful effect on the skin circulation, and in itself constitutes a very efficient form of massage, as well as relieving pain. As all objects weigh less in water than in air, a limb immersed in water can be moved with much less fatigue than in ordinary circumstances. The water supports the limbs, and movements are permitted that would be otherwise impossible. In addition to the actual mobilization of a stiffened joint, the fact that movement is possible at all has an excellent mental effect on the patient, and he is thereby encouraged to persevere in his efforts. For the relief of pain, heat in some form or another is a sovereign remedy. To be effectual it should be intensive, or as hot as can be borne. It may be applied in various ways—the hot immersion bath with the under-water douche 10 degrees higher than the bath, radiant heat, or the high frequency current (diathermy). In deep seated parts such as the hip, diathermy is the method of choice. For local applications to more accessible parts the hot pack of peat, mud, or paraffin wax is of value. As, owing to the immobilization of the affected joint, the muscles which control it are apt to waste, under-water massage and manipulation—given by either the Aix or Vichy system—will restore their tone, and at the same time remove effusions that are liable to form owing to the sluggishness of the blood and lymph circulation.

ACTIVE AND PASSIVE MOVEMENTS

Keeping in mind the dictum that no joint can possibly be healthy, unless it is moved, or in other words, unless it is functionally active, the question naturally arises as to whether osteoarthritic joints are to be kept moving. So far as possible, movement should be maintained, but it should be more passive than active. The

degree of pain that attends such efforts is the best guide. It has been wisely said that in osteoarthritis one should train up the osteophytes in the way they should go. This is not to say that in the acute stages of joint involvement movements are to be forcibly carried out. At this period rest with soothing applications is essential. When, as frequently happens, walking sets up intense pain and interferes with the patient's general health, the application of a calliper splint must be considered. Properly fitted, such an appliance will save untold pain. It is inconvenient, cumbersome and much disliked, but the assurance can be given that in time it can be dispensed with. In the case of the hip, with the cessation of the constant grinding of eburnated bone surfaces one upon the other the osteophytes interlock, and the periarticular structures become fibrosed and add to the stability of the joint.

Mobility is seriously interfered with, but pain disappears, and although the patient walks with a limp, he is able to live in comparative comfort.

The knee is somewhat different. Its strength lies in its ligaments, and osteophytic outgrowths do not interfere to such an extent with the apposition of the articular ends of the bones concerned as in the case of the hip. They do of course limit movement, but a patient can walk quite well with very little play between the two bones. After wearing a calliper splint for the knee for some time, it is often found on leaving it off there is still enough movement in the joint to permit walking without a limp. By cautious manipulation and the judicious employment of one or other of the methods of physical treatment briefly referred to above, the range of movement may be considerably increased.

Circulatory Disturbances of Lower Extremities. Louis C. Jensen, M.D., Minneapolis, Minn., in Med. Bull. Vet. Admin., 8:5:381, May, 1932.

The treatment of thrombophlebitis in previously normal veins includes the management of the thrombophlebitis and the post-phlebitic oedema and subsequent induration. In the early stages of the disease surgery is contraindicated unless the patient is suffering from repeated pulmonary infarction and septicemia. In such an extreme case an attempt might be made to ligate the common iliac vein at a point central to the process. In superficial phlebitis, such as in case of the great saphenous vein, ligation above and aseptic thrombosis might be performed. Also in some cases excision of much of the thrombosed vein, if the thrombosis is not accompanied by a streptococcal cellulitis, would be indicated and would curtail the disease and obviate late complications. Elevation, rest of the affected extremity and application of heat should be administered. In severe cases elevation should be continued until fever, pain, and local tenderness have subsided. Then gentle motion of limb in bed and light massage should be practiced. When the patient begins to get up, the length of time the limb is left dependent should be brief at first and gradually increased active motion should be instituted, as this promotes the normal return of circulation more than does continued prolonged relaxation. Bandaging if properly done, is helpful, but an elastic stocking is perhaps more efficient.

Intranasal Treatment by Ionization in Hay Fever, Vasomotor Rhinitis and Ozaena. Philip Franklin, F.R.C.S., Laryngologist to the Italian Hospital, etc., in British M. J., No. 3720, p. 751, April 23, 1932.

The treatment by zinc ionization of the hyper-sensitive areas in the nose has in my experience given relief in a higher percentage of cases than have other methods. The relief is obtained with relatively little discomfort and with few applications. The technic simplified by use of the intranasal ionizer was described in the British Medical Journal of June 27, 1931 (p. 1115). Zinc chlorid and zinc sulphate in one percent solution are equally effective, provided that a small amount of glycerine is added to the latter. Thin films of wool are soaked in the solution, wrung out flat, and applied to the sensitive areas of the nose. The exact application of the thin wool films to the middle turbinate, the adjacent septal surface, and the inferior turbinate is of first importance, and should be carried out with the assistance of proper illumination by direct or reflected light. The subsequent packing presses the films firmly in contact with the mucosa and fills the remaining space in the nose so that all the wool is in contact with the intranasal zinc rods. A range of current from 2 to 5 milliamperes is passed for fifteen to twenty minutes. Both sides of the nose may be treated simultaneously, unless the patient is particularly sensitive. A metallic taste is often experienced, which serves as a useful indication that the current is properly applied. An interval of ten days should elapse between treatments. A careful inspection of the nose and sinuses should, if possible, be made in the quiescent period. Marked obstruction, or any factor liable to interfere with the efficiency of the nose, should be dealt with. Although an operation for obstruction or removal of a pathological lesion may not directly affect the occurrence of hay fever, it does allow better access for treatment by ionization. Extreme cases of nasal obstruction cannot otherwise be adequately treated. The treatment may be given before or during the hay fever season.

SUMMARY

Further details of the technic of intranasal ionization are described, and a report given of the results of the treatment in ninety-one cases of hay fever, twelve of vaso-motor rhinitis, and in the only case of ozaena that has as yet been fully treated. These results which cover a series of cases treated during the last year, bear out the hopeful prognosis suggested in a previous communication.

Physiotherapy in Erysipelas. J. M. Davidson, M.D., D.P.H., Edinburgh, in British M.J., No. 3724, May 21, 1932, page 929.

In these circumstances I feel justified in submitting records of the following cases and advocating, on deductions drawn from their study, the early employment of ultraviolet radiation as a means by which practically all cases may be advantageously treated. The series consisted of fifty-one cases, for the most part consecutively treated at the Edinburgh City Hospital.

RESULTS IN A SERIES OF FIFTY-ONE CASES

In the series of cases described the source of ultraviolet light was a standard model *air-cooled quartz lamp*. The efficiency of the lamp was tested by estimating the erythema dose for the series of patients with the arc at a fixed distance of twelve inches from the skin surface.

In practically all the cases following the exposure of two and one-half to three minutes at this distance a mild but definite erythema resulted. In a few of the cases under consideration the individual erythema dose was estimated before treatment was commenced, but as individual differences in response at such short range proved to be very slight, and as such a preliminary in-

vestigation entailed deferring actual treatment, two and one-half to three minutes was assumed to be the universal erythema dose, except in the case of infants. For actual treatment one and one-half to twice the erythema dose was employed. In all cases, before estimating the erythema dose and before commencing treatment, the lamp was allowed to burn for at least five minutes to insure as far as possible consistency of the tube.

TECHNIC OF TREATMENT

Before treatment was commenced any soothing preparation previously applied to the part, especially if greasy, was carefully removed from the affected area and surrounding skin. All cases except infants were exposed for five minutes with the arc at a fixed distance of 12 inches. In the case of infants a slightly shorter exposure was employed, when the actual erythema dose was not estimated. In all cases part or all of the inflamed area, according to its extent, was included in the exposure, with a margin of about one and one-half inches of healthy skin when this was possible, the rest being protected by some light covering. In facial and head cases generally, the eyeballs were protected by small pads of cotton wool fixed by a narrow strip of adhesive plaster, but the eyebrows were left uncovered, and each part of the spreading edge was systematically exposed to rays falling, as far as possible, perpendicularly. When the entire involved area was easily covered by one exposure this completed the treatment, but occasionally part of the lesion, which at the time of admission was assumed to have subsided, was neglected and had to be treated later. In the few cases in which definite extension occurred through the erythematous area the treatment was repeated one or two days later if the margin of healthy skin could still be included. Following light treatment, the affected part was left uncovered, or at least without dressing, except in two instances in which pain was a prominent feature, and in these, lint wrung out in cold water and frequently renewed was sufficient. All other treatment was symptomatic.

The cases treated ranged in age from seven months to 74 years, and included "primary" cases and cases secondary to accidental wounds, operations and confinements. As usual, there was a marked preponderance of facial cases.

IMMEDIATE EFFECTS

During the exposure the patient in no instance complained of discomfort. On the contrary, the sensation of warmth produced appeared to be appreciated. In the course of a few hours the healthy skin included in the radiation area showed an intense erythema, with a degree of oedema, the appearance being so similar to that of erysipelatous area as to render the edge of the latter at times indistinguishable. Existing oedema of the actual lesion was slightly increased. At this stage as a rule, there was no complaint of pain, even when, as occasionally happened, there was a crop of tiny vesicles on the affected area or an oozing of serum. Local applications were unnecessary. By the end of forty-eight hours the oedema had generally subsided, and the affected skin became dry and wrinkled. By this time also there was a critical fall in temperature in thirty-one of the thirty-nine cases in which the whole edge of the lesion was tackled. In twenty-three of these cases the fall commenced within twenty-four hours. The further course of the cases was for the most part uneventful.

ULTIMATE EFFECTS

To gain a pure conception of the value or otherwise of radiation therapy it was essential that the cases treated should be adequately controlled. This was done by selecting as a control for each case treated a similar case treated by other means. In allocating "controls" the hospital records for the past five years were searched, special attention being paid to a consideration of age, sex, localization and extent of lesion, duration of illness and complications present. In all cases it was found possible to locate a suitable control.

In assessing the therapeutic value of physiotherapy employed thus, attention was paid to: (1) the duration of the pyrexia, (2) The extent of spread of the lesion, after treatment, (3) the incidence of complications, and (4) the occurrence of relapse.

Duration of pyrexia.—In 47 cases treated by ultraviolet rays the average duration of fever after treatment was 3.85 days while in 47 control cases the average duration of fever after treatment was 5.16 days.

Extent of spread.—Definite spread of the dermatitis throughout the irradiated area of healthy skin occurred in a few cases, principally in those cases in which treatment was commenced at a comparatively late stage and the lesion was obviously very active. This was noticed particularly in cases of the wandering type, when two or more exposures of the spreading edge at intervals of two days were necessary before the spread was arrested.

Incidence of complications.—The sole complication seen in cases treated and surviving was streptococcal abscess which occurred in two cases.

Incidence of relapse.—Relapse occurred in one of the 47 cases. The inflammed area was promptly irradiated, and the condition subsided completely within 24 hours of the onset.

SUMMARY AND CONCLUSIONS

A report is presented on 51 cases of erysipelas treated by exposure to an artificial source of ultraviolet light, the exposure being one and one-half times to twice that required to produce a definite erythema on normal skin.

The treatment of erysipelas, particularly the early case, by ultraviolet light appeared to give better results than other methods in use.

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